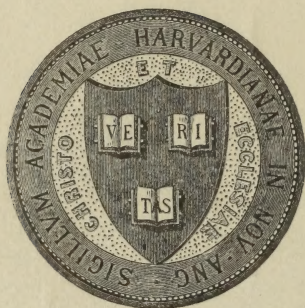


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ORGAN OF THE

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EDITED BY

GEORGE H. CARPENTER, M.Sc., M.R.I.A.,

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AND

ROBERT J. WELCH, M.R.I.A.

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ERRATA.

- Page 41, last line, for GREEN read GREER,
 „ 156, last line, for H. E. CUTHBERT read H. G. CUTHBERT,
 „ 174. after *S. biscutata* and *S. spinipes*, for (Bagnall) read Bagnall.

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The Irish Naturalist.

VOLUME XXIV.

THE GEOGRAPHY OF IRELAND AS A FIELD FOR IRISH NATURALISTS.

BY PROF. GRENVILLE A. J. COLE, M.R.I.A., F.G.S.

THE naturalist claims kinship with all scientific workers, though many scientific workers would hesitate to regard themselves as naturalists. The tendency towards specialisation is often deplored ; but close attention to one line of research soon leads to a sense of dependence on results obtained in other branches. The whole of scientific work, as the term is usually understood, deals with natural phenomena, and nature herself becomes the ultimate region of appeal. The physicist who speculates as to the earth's age becomes confronted by facts in biology and geology ; the chemist, whenever he takes up a mineral, finds himself in alliance with natural history ; and the engineer meets the microscopist in the contemplation of a drop of water from a town-supply, where competing organisms battle for the lives of men. A wide field of Natural History has, moreover, been opened out for every thinking man, for the historian equally with the student of rock-weathering, for the psychologist side by side with the meteorologist, through the recognition of Geography as a science. Grasping the significance of the movement in other lands, the Department of Agriculture and Technical Instruction has lost no time in including Geography in its curriculum for Secondary Schools. Let us hope that in consequence the geography of their country will be a familiar study to our rising Irish naturalists.

Anyone familiar with American or with German journals will know that geography is no longer a merely descriptive science. While the description of surface-features has been undertaken with far more scrupulous precision than of old, an attempt is made to connect them on the one hand with their modes of origin, and on the other with their influence on living things, from mosses and marmots up to man. We talk vaguely of "our country," with a genuine feeling for it ; but in most cases the grounds for this sentiment are concealed even from ourselves. The pure beauty of a chain of hills, a band of purple against the evening air, appeals to an instinct that is more ingrained in Irish folk than in those of many other lands ; but a Tipperary man will feel more affection for the uplands of Knockmealdown than for the serrated edge of Malvern, while he will set against the burial-hill of Maeve in Connaught the limestone boss of Cashel of the Kings.

It is this natural and accumulated heritage that goes by the name of country. Men fight and die for their country, so they say, but in reality for what has been reared in its wide and wind-swept spaces or in the compelling shadows of its glens. Strength of body and courage of soul have been brought to this focus by invaders from other lands ; and it is well to remember that the earliest human occupants of Europe were invaders on the acquired heritage of the Mammoth, the Rhinoceros, and the Giant Deer. But such culture as invaders brought to Europe with them has long become moulded into local forms and usages. The conditions of the cultivation of the soil have become reflected in the cultivation of the race. The ground of the country, *solum patriae*, may be obscured by the throng of chariots and of armed men trooping to the ford ; but from its well-wrought furrows it has given those armed men birth.

The study of an Irish county, or even of a group of townlands, becomes in every sense a work of natural history. The naturalist will thus provide a sound basis for the archaeologist, and the association of the two types of observer in our field-clubs will tend to become further justified. Our river-systems, on the other hand, are in much need of

investigation, since many of the main streams have a complex origin, and their courses, like that of the Dee or the Severn on the Welsh border, may have been greatly modified as recently as Glacial times. J. B. Jukes, in 1862, in his memorable paper on "The River-valleys in the south of Ireland," was the pioneer in enquiries as to river-capture. The mere fall of a stream from point to point along its course, when carefully worked out from maps, may suggest relationships with the structure of the country; while the height of the barriers across which the stream appears to have carved its way points in many cases to a very ancient origin, when it rose on a land-surface now removed by denudation.

As subjects for county-description, we may suggest Tyrone or Antrim—the former marked out so definitely as the basin of the Mourne, with its drowned continuation in the Foyle, and the latter so largely dependent on the volcanic activity of Oligocene times. R. Lloyd Praeger, in a unique railway handbook, has shown what a naturalist, intimate with all aspects of the country, can do with the hilly lands of Mourne; and his "Flora of the West of Ireland" possesses a distinctly geographic touch. But we still need local studies, say, of the quartzite domes of Connemara, or the sunken coast of western Mayo, or, a more difficult and attractive matter, the successive peneplanes in the county of Waterford. Up and down this varied country, from the meanders and terraces of the local streamlet to the glaciated mountain-sides or the cave-set scarps of limestone, there are everywhere unworked fields for the geographer.

The Ordnance Survey Maps, contoured and hill-shaded, chosen for the observer's particular homeland, form a very pleasing basis. With due reference to the corresponding sheet of the Geological Survey, an essay may be written connecting the familiarly appreciated features with the underlying geological structure. The sites of historic buildings or prehistoric settlements may be found to have been decided by some event which took place on the sea-floor of Carboniferous or Silurian times. The glens cut in stratified foothills, which play so large a part in the

human history of Leinster, are consequent on an earth-fold that formed part of the Caledonian continent. The royal tombs of Rathcroghan in Roscommon are placed on the high slabs of the limestone plateau, where it is free from encumbrances of glacial drift, so that they have no rivals in the landscape. De Courcy's castle on the rock of Fergus is planted on an igneous dyke, defiant of the sea ; and the keep of Carrigogunnel, in Limerick, crowns the ash and lava of a dead volcano.

The old trade-routes along the eskers deserve investigation, and the rias of the coast have tempted equally the Mediterranean races and the Norsemen from their viks and fjords. A typical fjord, with huge glacial terraces at its head, remains to be described in Killary Harbour ; and the cirques of the Comeraghs await the young geographer who will pitch his tent among them.

Lastly, we may note that Miss Newbigin's essay on "Modern Geography" in the Home University Library has shown to thousands of readers the lines on which such studies may be pursued. Albrecht Penck's "*Morphologie der Erdoberfläche*," W. M. Davis's works on Physical Geography (particularly his "*Practical Exercises*," with its atlas for personal development), and W. H. Hobbs's manual on "*Earth Features and their Meaning*," will fix attention on the evolution of surface-forms. L. W. Lyde's "*Continent of Europe*" shows how such features have affected civilisation in the region that concerns us closely ; while H. J. Mackinder, with his exceptional feeling for the physical foundations and the imperial outcome, appeals to our knowledge of home-countries in his "*Britain and the British Seas*." Matters may be narrowed down by passing on to Miss J. B. Reynolds's "*Elementary Regional Geography of Ireland*," or O. J. R. Howarth's "*Oxford Geography of Ireland*," or A. M. Davies's "*Geography of the British Isles*." A systematic course of such reading, in the company of a good atlas and local large-scale maps, may be commended to groups formed within our field-clubs, and the view gained of Ireland in relation to her surroundings may prove especially fruitful at the present stimulating time.

SOME ADDITIONAL COLEOPTERA FROM CAVAN.

BY G. W. NICHOLSON, M.A., M.D.

As I had the good fortune to take a specimen of *Pterostichus aterrimus*, Pk., at Cloverhill, in September, 1913,¹ I revisited that place at the end of May of last year, a time that I thought would be suited for finding it again. I was, however, doomed to disappointment. Diligent search in every conceivable spot, both at Cloverhill and on several of the neighbouring estates, produced no result as far as this insect was concerned. In spite of this my time was not wasted, and I now give a list of the more noteworthy of my captures.

Among them there are the following additions to the Irish list :—

1. *Ips iv-guttata*, F. Six specimens in the burrows of *Hylastes palliatus*, Gyll., under the bark of the stump of a Scotch Fir, at the felling of which I had assisted the previous September, in a wood at Cloverhill, on June 4.

2. *Dryophilus pusillus*, Gyll. Twelve specimens beaten out of a pine on the avenue at Castle Saunderson, Co. Cavan, on June 2, and another at Cloverhill on June 4.

3. *Salpingus ater*, Pk. A specimen beaten out of a Birch on the bog at Cloverhill on May 25. This may be a doubtful species, but my specimen agrees in every detail with the description in Fowler's "British Coleoptera."

4. *Trypodendron lineatum*, Ol. I found a single specimen under the bark of the same stump as the *Ips* on June 4.

The following species, all of which, I believe, are additions to the county list, may be mentioned. Except where otherwise stated the locality is Cloverhill :—

Bembidium punctulatum, Drap., *B. bipunctatum*, L., *B. assimile*, Gyll., and *B. aeneum*, Germ., on the shore of Lough Erne at Castle Saunderson.; here I also found a purple variety of *Anchomenus parumpunctatus*, F.; *Bradycellus placidus*, Gyll., in moss beside one of the Cloverhill lakes; *Coelambus v-lineatus*, Zett.; *Hydroporus pictus*, F.; *H. lineatus*, F.; *H. nigrita*, F.; *H. memnonius*, Nic.; *Agabus chalconotus*, Pz.; *A. affinis*, Pk.; *Ilybius ater*,

¹ *Irish Naturalist*, xxiii., p. 68.

De G. ; *I. obscurus*, Marsh. ; *Gyrinus minutus*, F., the latter very common in bog holes.

Lesteva longelytrata, Goeze ; *L. sicala*, Er., common in moss ; *Stenus fornicatus*, Steph., several specimens by treading the vegetation at the edge of a lake, also one at Castle Saunderson ; *Philonthus quisquiliarius*, Gyll., both the type form and the var. *dimidiatus*, Er., on the edges of lakes ; *Megacronus cingulatus*, Mann., two specimens ; *Agaricochara laevicollis*, Kr., one in a Boletus. This species has only quite recently been added to the Irish list by Mr. Bullock.¹ *Encephalus complicans*, West., one by sweeping ; *Leptusa fumida*, Er., a few in a dead Holly log ; *Tachyusa atra*, Gr., one in mud by the side of a lake.

Eumicrus tarsatus, Mull., one on the lawn, by sweeping ; *Choleva Watsoni*, Spence ; *Anisotoma calcarata*, Er., a few ; *Colenis dentipes*, Gyll., one. I obtained the last two species by sweeping under Beech trees in the middle of the afternoon, on several days. On returning on the same evenings at dusk, I never swept a single one.

Podabrus alpinus, Pk., a few on fir trees ; *Telephorus figuratus*, Man., common everywhere.

Cercus bipustulatus, Pk., common by sweeping over boggy ground. One of my specimens is dark brown, without the usual reddish spots on the elytra ; *Epuraca obsoleta*, F., in numbers in the runs of *Hylastes palliatus*, Gyll. ; here also I obtained twelve specimens of *Ips iv-punctata*, Hbst., a species that I have only recently added to the Irish list from Meath.² Both it and *I. iv-guttata*, F., occurred in the same runs together ; *Rhizophagus depressus*, F., common under fir bark ; *Telmatophilus caricis*, Ol. ; *Lathridius lardarius*, De G. ; *Adalia oblitterata*, L. ab. *sublineata*, Weise, several specimens together with the type form on fir trees. This is the first time this aberration, which differs merely from the type in the possession of two black dashes on the elytra, has been recorded from Ireland, although it no doubt occurs in many localities ; *Mysia oblongoguttata*, L., common ; *Halyzia xvi-guttata*, L., one on a fir tree.

¹ *Irish Naturalist*, xxiii., p. 105.

² *Ibid.*, p. 71.

Cyphon coarctatus, Pk., on May blossom; *Dascillus cervinus*, L., sparingly by sweeping.

Corymbites tessellatus, F. *C. quercus*, Gyll., both the type form and the var. *ochropterus*, Steph., in great abundance; *Cryptohypnus dermestoides*, Hbst., under stones by the shore of Lough Erne at Castle Saunderson; *Melanotus rufipes*, Hbst.; *Elater pomorum*, Hbst., very common both under the bark of decayed birch posts and on the foliage of young birch trees on the bog at Cloverhill; *Priobium castaneum*, F., in decayed Holly wood.

Rhinosimus viridipennis, Steph., common; *Rhagium bifasciatum*, F., common on May blossom.

Donacia bicolora, Zsch.; *D. simplex*, F.; *D. vulgaris*, Zsch.; *Phaedon armoraciae*, L.; *Galerucella nymphaeae*, L.; *G. sagittariae*, Gyll.; *G. lineola*, F.; *Batophila rubi*, Pk.; *Aphthona lutescens*, Gyll.; *Apteropeda orbiculata*, Marsh.; *Cassida vibex*, F.

Bruchus atomarius, L., very common on *Vicia sepium*.

Phyllobius argentatus, L. Among the numerous specimens I saw, there was one of a grey colour (which corresponds to the var. *cinereus*, Fowler, of *P. maculicornis*, Germ., but does not seem to me to be worthy of a name); *Liophloeus nubilus*, F., common on Ivy; *Barynotus obscurus*, F., *B. elevatus*, Marsh., common by evening sweeping on the lawn; *Tropiphorus obtusus*, Bons., I secured four specimens of this rare insect together with the last two species; *Hypera punctata*, F.; *H. rumicis*, L.; *H. pollux*, F.; *Grypidius equiseti*, F., common; *Dorytomus maculatus*, Marsh.; *Tanysphyrus lemnae*, F.; *Coeliodes quercus*, F.; *C. rubicundus*, Hbst., sparingly on Birch; *Phytobius canaliculatus*, Fahr.; *Ceutorrhynchus viduatus*, Gyll., one by general sweeping; *C. cochliariae*, Gyll.; *Limnobaris pilistriata*, Steph., very common in all the ditches; *Balaninus pyrrhoceras*, Marsh., common; *Anthonomus rubi*, Hbst.; *Anoplus plantaris*, Naez., common; *Orchestes salicis*, L.; *Rhampus flavicornis*, Clair.; *Cionus hortulanus*, Marsh., common; *Nanophyes lythri*, F.; *Apion cerdo*, Th., *A. subulatum*, Kirby, both these species, the latter of which has already been recorded from Cavan, occurred together on *Vicia sepium*; the following common species of this genus were

also noted : *A. dichroum*, Bed. ; *A. apricans*, Hbst. ; *A. humile*, Germ. ; *A. Gyllenhali*, Kirby ; *A. ervi*, Kirby ; *A. viciae*, Pk. ; *Rhynchites minutus*, Hbst.

Hylastes ater, Pk. ; *H. palliatus*, Gyll. Inquilines in the burrows of the latter species, which was very numerous in a fir stump, were *Ips iv-guttata*, F., *I. iv-punctata*, Hbst., and *Epuraea obsoleta*, F.

Aphodius fossor, L. ; *A. depressus*, Kug. ; *Geotrupes stercorarius*, L. ; *G. sylvaticus*, Pz. ; *Melolontha hippocastani*, F., one at Cloverhill, and another caught for me by the Hon. Barry Maxwell at Farnham. This is the first record of this species from Ulster. *M. vulgaris*, F., Cloverhill.

The weather was, on the whole, cold and wet, so that many of the summer species I might otherwise have found, no doubt escaped observation.

Oxford and Cambridge Club,
London, S.W.

THE POST-GLACIAL LEVELS OF LOUGH NEAGH.

BY A. W. STELFOX, M.R.I.A.

UPON reading the very lucid account of the warping of the shorelines of the Great Lakes in North America, in Mr. W. B. Wright's "Quaternary Ice Age," caused by the post-Glacial elevation of the north-eastern part of that country, it occurred to me that a similar warping of the shoreline should exist in Lough Neagh. The post-Glacial elevation of the N.E. of Ireland, which has left its mark in the "25 feet" raised beach round our coast, must, one would think, have raised the level of the outflow of Lough Neagh, and have caused a corresponding submergence of the shoreline towards the southern end of the lake. But a few days after this thought crossed my mind, I turned up in the *Proceedings* of the Belfast Naturalists' Field Club (vol. ii., series ii., p. 117), an abstract of a paper read on 15th November, 1881, by the Rev. Canon Lett, on "Records of a former level of Lough Neagh." The following quotation is taken from this paper :—

"Passing to his own observations, he stated that the

water was remarkably shallow near the shore, so that a person can wade out for many yards, there being a gently shelving bank for some distance, and then a sudden precipitous drop from three or six feet to a depth of from eleven to sixteen feet. The shore population call this "the edge of the gut," and its margin can be traced through the water in summer or autumn by the fringe of *Potamogetons* which find on it a suitable habitat. At one place a boat can be rowed along this edge with two feet of water at one side, and nine feet at the other. The formation is the Boulder Clay. It is not possible that the undercurrents in stormy weather could do this, and the edge is too deep to have been scraped out by the ice of any recorded frost. This second margin is more or less distinct all round the south-east, south, and western shores, and is, in some instances, at a considerable distance from the present shore. In the opinion of the writer, this was a former escarpment, or shoreline, worn away when Lough Neagh was at least 30 feet lower than at present, and when some 20,000 acres at the south margin was dry land, covered with waving woods. The present Derryinver at the mouth of the Upper Bann, represents the Tuach Tubhear mentioned in the Book of Leccan, to which the probable overflow extended. The formation of the surface of submerged escarpment bears out this idea. It is studded in many places with large root-stumps *in situ*, and the fallen trunks of oak and fir trees, and a thick stratum of peat. In the turf bogs which border Lough Neagh, fir and oak roots of very large size are also found far below the present mean level of the lough."

Canon Lett seems to infer, though he does not state, that this submerged shoreline is absent from the northern shore of the lake, which if so, would point to the tilting of the bed of the lake, as a possible explanation of the submergence of its southern shoreline. It would be most interesting, however, if Mr. Wright would give his opinion on the matter, and also whether he considers this submerged escarpment or shoreline contemporaneous with the "25-feet" raised beach.

REVIEWS.

THE ASCENT OF SAP.

Transpiration and the Ascent of Sap in Plants. By HENRY H. DIXON, Sc.D., F.R.S. Macmillan & Co., 1914. Pp. viii. + 216. Price 5s. net.

This book of eleven chapters is one of a series of science monographs designed to "afford to authorities upon definite aspects of science a means by which an adequate statement of their work may be made available to the scientific world within a volume of reasonable dimensions and at a moderate price." Although the earlier theories of the ascent of sap are briefly reviewed and criticised in the book its main purport is to give an account of the so-called "cohesion theory," first formulated by the author and Dr. Joly in 1894, and of the data on which it is based. In a general way therefore, perhaps, the most interesting part of the book is chapter iv., where this theory is discussed. Briefly stated it may be said that according to the older theories the ascent of sap was presumed to result from pressure acting upwards from below on the ascending column, assisted, according to certain authorities, by subsidiary pressures developed locally and at intervals in the living cells distributed in the woody tissues of the stem. According to the cohesion theory, on the other hand, the ascent of sap during transpiration is due to a pulling force developed in the leaves, acting from above downwards and transmitted through the sap which is therefore in a state of tension in the conduits of the wood. The later chapters of the book deal with the tensile strength of the sap, the tension required to raise it, the osmotic pressures of the cells of the leaves and finally the amount of energy required and available for causing its rise. After studying these points the reader cannot fail to recognise that this theory has very much to recommend it, and, indeed, up to the present no substantial arguments have successfully been advanced against it. It may be pointed out, however, that the theory only explains the ascent of sap when the plant is transpiring, and apparently would not account for its rise—if such occurs—in a deciduous tree, for example, in spring before the foliage buds have expanded, unless, indeed, transpiration from the bark of the twigs be looked upon as capable of developing sufficient tension.

On reading the book one cannot but be struck with the critical attitude which the author adopts, not only towards the work of others, but also to his own work, sources of possible error being looked for everywhere and when found eliminated as far as possible by approaching the various problems along all the available avenues of attack. The book also reveals the author (as his published papers have already done to those who have studied them) as possessing great originality and resource in dealing with experimental problems especially such as demand delicate and accurate quantitative measurement. In these respects attention may be called to the particularly interesting experiments in chapter iii. dealing

with the elimination of poisonous materials developed in stems subsequent to the killing of portions of them by heat, to chapter viii. on the thermoelectric method of cryoscopy and to the new and elegant method of obtaining apparently unaltered sap from cells after solidification of the tissues by exposure to liquid air, described in chapter ix. Such a happy combination of the talents of the naturalist with those of the physical chemist in one author is as rare as it is valuable.

Some exception might be taken to the method in which the references to the literature are presented at the ends of the various chapters. Thus, one finds Strasburger's well known volume of researches on the "Leitungsbahnen" mentioned in the bibliographies of no less than four chapters, but with no indication in any instance of the page or chapter in the volume dealing with the points being discussed in the text. Again, one may find an author and his publication mentioned in the bibliography but not definitely alluded to in the text of the chapter. For a book of this size it would probably have been more convenient to have been content with one bibliography and to have made definite and explicit references to it in the course of the text. Occasionally one feels in reading the book that perhaps a gifted experimenter is not always the clearest exponent of his work, but any slight lack of clearness here and there is easily explained by the inevitable condensation of material which must occur when space is limited. A couple of unimportant typographical errors may be noted in passing :—On page 80, last line but one, "Beders-tung" should probably read "Bedeutung," and page 202, line 25, "rises" should apparently be "uses." The appearance of this book is to be welcomed, and it should be in the hands of every student of vegetable physiology, not only on account of the theories and facts which it presents, but also as affording a good insight into the ways and means by which important and far reaching results in modern science are obtained.

G. H. P.

REPTILES AND AMPHIBIANS.

Reptiles and Batrachians. By E. G. BOULENGER, F.Z.S. Pp. xiv. + 278. With numerous illustrations. London : J. M. Dent & Sons. Price 16s. net.

The author of this beautiful and interesting book is curator of the "lower Vertebrates" in the London Zoological Gardens, and anyone who has spent an hour or two in the new Reptile House in Regent's Park knows that Mr. Boulenger has abundant material for such a work, and that he has a genuine delight in the creatures which he describes. The volume contains a summary classification of the Reptiles and Batrachians, a large number of species being mentioned, briefly diagnosed and illustrated by means of admirable photographs mostly taken from living specimens. Visitors to the Dublin "Zoo." will be interested to read Mr. Boulenger's account of the New Zealand Tuateras, the only surviving examples of

the order Rhynchocephalia. Our Dublin specimen by his behaviour confirms the statement that "very few ever become at all tame, and they can never be handled without the risk of a rather painful bite."

In turning to the chapter on Lizards, the Irish naturalist looks with especial care for a notice of our only native reptile *Lacerta* (*Zootoca*) *vivipara*, and is interested to learn that captive specimens of this species "have to be kept in comparatively damp surroundings," as in the wild state they often seek haunts in the neighbourhood of water. It is important to know that a number of Continental Green Lizards (*Lacerta viridis*) "imported some years ago by the Hon. Cecil Baring, and let loose on the small island of Lambay off Dublin, have maintained themselves and multiplied."

The chapter on Snakes is noteworthy as affording reliable information on the habits of these reptiles and their relations with their prey. "The power of fascinating other animals, so often attributed to snakes is known to be a fallacy . . . for when live mice, rabbits, ducks, &c., are introduced into their cage, these will often settle down on the coils of the snake or force them, by biting or pecking, to quit some snug corner which they desire to appropriate." (This sentence, by the way, furnishes an example of a slovenliness in construction and a want of clearness that too often disfigure Mr. Boulenger's English style). No animals, except monkeys, appear to recognise snakes as dangerous, or to show any alarm at their proximity. Snakes have the habit of passing the tongue all over their prey, "in order to locate the head;" this habit, Mr. Boulenger believes, has given rise to the statement that they salivate the victim as a preparation for swallowing it. Like other naturalists who have given attention to the subject, he can produce no evidence for the well-worn legend that the female Viper shelters her young in time of danger by temporarily swallowing them.

The concluding section of the book deals with the Batrachians (or Amphibians as they are called in most zoological treatises). Mr. Boulenger has tested experimentally Dr. Kammerer's conclusions as to the correlation of the pattern of the Spotted Salamander (*Salamandra maculosa*) with its environment, and has failed to obtain the results announced by the Austrian zoologist; he does not refer to Kammerer's remarkable experiments in transforming the breeding habits of *S. maculosa* and *S. atra*. Mr. Boulenger has succeeded, however, in obtaining frequently the oft-quoted transformation of the Mexican Axolotl into *Amblystoma*, by placing a specimen, "when about five inches in length, under conditions which force it to make free use of its lungs."

Mr. W. S. Berridge is responsible for the remarkably excellent series of photographs that illustrate the book. The reptiles, frogs, and newts have, almost without exception, been "caught" in a striking and characteristic pose, and their life-like portraits have been admirably reproduced. The book can be heartily commended to those naturalists who, on the modest scale possible to their situation, follow Mr. Boulenger in caring for the "lower vertebrates," be they alive or dead.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Marmoset from Mr. F. Hoffman, a Blackbird from Mrs. Winkworth, a Silver Pheasant from Mrs. Allen Morgan, a pair of Californian Quail from Dr. Quinton Wallace, Grass Parrakeets from Mr. H. P. Goodbody, and a Diamond Python from Mrs. Stanford Robinson.

NOVEMBER 18.—A public lecture was given in the Theatre of the Royal Dublin Society (by kind permission of the Council) by Mr. L. E. STEELE, M.A., on "Animal Artists of the Ancient World." After reference to the cave-paintings of animals made by Palaeolithic Man, Mr. Steele described, with great wealth of illustration, the zoological features of Assyrian and Egyptian monuments; pointing out that the specific characters of birds and mammals were often strikingly depicted by the ancient artists, and that the monuments afforded evidence as to the introduction of European and Ethiopian animal types into Egypt under kings of various dynasties. The President, Sir CHARLES BALL, Bart., expressed the thanks of the large audience to Mr. Steele for his fascinating lecture.

DUBLIN MICROSCOPICAL CLUB.

DECEMBER 9.—The Club met at Leinster House, DAVID McARDLE (President) in the Chair.

PROF. G. H. CARPENTER showed a maxilla of the Breeze-fly *Therioptectes tropicus*, a tabanid, calling attention to the presence of both the galea and the lacinia of a typical maxilla, in the piercing stylet into which the maxilla in these flies has been transformed.

DR. G. H. PETHYBRIDGE exhibited a "black apple." As exhibited, the fruit was considerably shrivelled, but in the earlier stages, except for the presence of a few spots of *Fusicladium* on its surface, its only abnormality appeared to be in its colour. Gradually the whole of the internal tissues, with the exception of some layers of cells near the skin, became dried up and the fruit consequently contracted and became wrinkled. These changes are due to the attack of the parasitic fungus *Sclerotinia fructigena* Schroet., which causes the well known "Brown Rot" of fruit. Sections through the peripheral tissues of the apple were exhibited and showed very abundant fungus hyphae in and between the cells. These hyphae as they approach the surface become darker until they reach the cavities of the cells of the epidermis when they are of a dense black colour, thus giving the apple its black skin. On a few areas of the skin there were the first indications of the appearance of fructifying pustules of the fungus but no conidia had yet been produced on them. The specimen exhibited was obtained from Scotland.

D. McARDLE showed specimens of *Dicranella Schreberi* Schp. a very minute moss scarcely half an inch high, which grows in tufts of a bright yellowish green colour. The leaf arrangement in a squarrose direction from a broad amplexicaul erect base, gives the stem a characteristic appearance; from the broad half-sheathing base, the leaves rapidly contract into a lanceolate subulate limb, which is irregularly denticulate

for the greater part of its length; a well marked nerve reaches to the somewhat broad apex. The plant is restricted in its distribution in Ireland. In Dr. Moore's work on the mosses of Ireland (*Proc. R. I. Acad.* vol. i., *Science*, 1873, p. 137) under additional species he notes *Dicranella Schreberi*. "Hab. moist clay banks, near Dunsink, Dublin, D. Orr, October 1869. Not hitherto observed elsewhere in Ireland." Since that period we know it has been found in North Kerry and in the Counties of Down and Antrim, and it has been recently found growing on clay banks in the Glen of the Downs, Co. Wicklow, extending the distribution to the south-east.

NOTES.

ZOOLOGY.

The Death's-head Moth in Ireland.

I am able to add another locality to those mentioned by Professor Carpenter in his note on this moth last month. This is Coolmore in Co. Donegal, where a specimen flew into the Strand View Hotel at the end of September and was brought to me. I have looked up the records of its occurrence in Ireland as far as I am able, and find that it has been met with in the following counties:—Antrim, Londonderry, Donegal, Tyrone, Monaghan, Armagh, Down, Louth, Meath, Westmeath, Sligo, Galway, Dublin, Wicklow, Wexford, Waterford, Cork. That is in 17 out of the 32 counties of Ireland. From the distribution thus disclosed I should say that the moth is probably to be found in every county in Ireland were it looked for. It has a great fancy for flying into houses, and it is thus most of the captures have been made. Unfortunately most people are afraid of it and it thus escapes, I am sure, on many occasions. Its great size, peculiar markings and power of squeaking have invested it with superstitious terror. It would be interesting to know if any additions can be made to the list of counties I have mentioned.

W. F. JOHNSON.

Poyntzpass, Co. Armagh.

Records of Lepidoptera from Enniskillen.

The following species of Moths taken last year are worthy of record:—*Hydroecia crinanensis*, Burrows.—Abundant at night on ragwort flowers, at Florencecourt, August, 1914.

Larentia flavicinctata, Hb.—On rocks at the head of a remote mountain glen near Florencecourt, beginning of August, 1914.

Phibalapteryx lapidata, Hb.—Discovered by me near Florencecourt, on the slopes approaching Culcagh, September 20th, 1914.

Chesias spartiata, Fues.—One specimen, October 17th, 1914, found at rest on the wall of a lighted room about 11 p.m.

J. E. R. ALLEN.

Portora, Enniskillen.

Honey Buzzard at Knock, Co. Down.

On November 15th, 1914, my attention was attracted by a number of Magpies, which were chattering in some fir trees in my garden at Knock, Belfast. I fired three shots at these birds with a rook rifle from an upstairs window, before I discovered the cause of the disturbance, and then I saw a large bird sitting on a lower branch. I fired at it with the rifle, and it flew into a neighbouring plantation followed by the Magpies, who kept on chattering at the stranger, and in so doing directed me to where it had gone, and I killed it on the wing with a shot gun. I have given the foregoing details to show its comparative tameness. It would seem probable that the bird was blown out of its course by the strong north-easterly winds which were then prevalent, and it has been suggested that the cannonading on the continent might have had something to do with it being so much out of its course. It is now in the hands of Messrs. Sheals, the taxidermists, who identified it, and who inform me that it is a young male Honey Buzzard (*Pernis apivorus*). It was in excellent condition, and in its stomach were found the remains of bees and other insects.

HERBERT T. MALCOMSON.

Knock, Belfast.

Waxwings in Co. Mayo.

I visited the Tearaght Rock light-house early in July, and one of the keepers, Mr. Michael Roche, told me that in February, 1909, he saw nine Waxwings on Eagle Island, Co. Mayo, when stationed there. He described the birds accurately.

RICHARD M. BARRINGTON.

Fassaroc, Bray.

Chiffchaff in December.

I watched a Chiffchaff for some time this evening feeding in the Hazel scrub which abounds along the shore of Lough Erne, here at Dreenan, where large flocks of Long-tailed Titmice and Golden Regulus also congregate. I think it may be interesting to record it.

HENRY B. RATHBORNE.

Greenan, Pettigo.

OBITUARY.

PROFESSOR RICHARD JOHN ANDERSON, M.D.

We regret to record the death, in July last, of Dr. R. J. Anderson who for thirty years past has occupied the chair of Natural History at University (or as it was called, until 1908, Queen's) College, Galway. He has left a monument in the Zoological Museum at the College, which contains a remarkably complete series of teaching material and some noteworthy individual specimens. An illustrated account of this museum was published by Prof. Anderson in the *Irish Naturalist* (vol. viii., 1899, pp. 125-131). He was handicapped by the extremely wide scope of his teaching work, but he attended constantly the meetings of the British Association and of the International Zoological Congress, where he brought forward several papers on details of the vertebrate skeleton. In the *Irish Naturalist* (vol. x., 1901, pp. 117-119, and vol. xiii., 1904, pp. 126-7) he described the skull and teeth of the Beaked Whale (*Mesoplodon Hectori*); writing also (*Ib.* vol. ix., 1900, pp. 150-2) on Crookedness in the Sterna of Fowls.

NEWS GLEANINGS.

The Irish Fisheries Office.

Naturalists beyond the borders of Ireland will unite in wishing all happiness and prosperity to W. S. Green, C.B., who has lately retired, under the age limit, from his position as Chief Inspector of Irish Fisheries. The work of surveying the western waters which is now carried on by the Government Department was begun thirty years ago largely as the result of Mr. Green's private enterprise and enthusiasm. We wish him a long and enjoyable leisure with abundant opportunity for continuing the geographical and biological studies to which his life has given so much encouragement.

The post of Chief Inspector has been conferred on the distinguished marine zoologist, E. W. L. Holt, M.R.I.A., who has as his colleagues in the inspectorate, Charles Green and R. H. Lee.

University College, Galway.

The Chair of Natural History vacated through the death of Prof. R. J. Anderson, has been filled by the appointment of Joseph Mangan, M.A., F.R.C.S.C.I., who from the Royal College of Science, Dublin, passed to Manchester University as Research Scholar and Lecturer in Economic Zoology, and has, for the past year been working as Assistant Professor of Biology at the School of Medicine, Cairo. Galway is an admirable centre for biological study—especially as regards the marine fauna and flora, and we hope that Irish natural history will benefit by Mr. Mangan's transference from the east to the west.

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This Magazine—founded in 1871—is devoted to the publication of Original Matter relating to the Natural History of Scotland, and includes Papers contributing to the elucidation of the Fauna, Observations on Life Histories, etc., and Notes recording the occurrence of uncommon species and other useful and interesting facts.

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CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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A LIST OF THE LAND AND FRESHWATER
MOLLUSCA OF THE DINGLE PROMONTORY.

BY A. W. STELFOX, M.R.I.A.

THE present paper deals with that portion of the Dingle peninsula contained in the old Barony of Corkaguiny, which, according to Praeger's division of Ireland, is included in the vice-county of South Kerry. It includes the Great Blasket and the attendant islands, "the nearest parish to America," situated off the extreme western point; also the Seven Hogs or Magharees at the entrance to Tralee Bay.

Much of the peninsula lies at a height exceeding 2,000 feet, Brandon Mountain attaining the greatest elevation in 3,127 feet. Everywhere deep valleys, coombs, or rock-basins lie between the mountains, but the coombs are particularly in evidence to the north of the main watershed. Cliffs with rich, though low-growing, vegetation are frequent, especially around Brandon Mountain and Connor Hill. Slates of Silurian and Old Red Sandstone age form the greater part of the district, but the presence of Glacial drift containing limestone along the shore of Tralee Bay mitigates to some extent the unfavourable nature of the slates and conglomerates. The great areas of sand dunes round the coast, which include in their composition a large percentage of calcareous material, likewise have a stimulating effect on the molluscan fauna. Were it not for these sandy areas the list of species would be considerably diminished, not only in the case of the land shells, but also in that of the freshwater species. The chief habitat for the latter is the strip of marsh-land which lies behind the fringe of dunes for several miles east and west of Castlegregory. The Magharees and the peninsula stretching north from Castlegregory are formed of Carboniferous limestone, but no part of this limestone area have I been able to work.

Compared with some other districts in which I have collected, such as West Mayo, the Dingle promontory cannot be said to be heavily peat-covered; yet in the valleys and on the northern slopes of the mountains much of the ground

is clothed by peat bog. The southern and western flanks of the mountains, especially west of Dingle, are remarkably free from such deposits, the vegetation being mainly composed of grasses and *Erica cinerea*, *Calluna vulgaris*, and *Ulex Gallii*. The last mentioned plant gradually disappears at about 1,200 feet alt., above which elevation *Juncus squarrosus* is a very conspicuous member of the flora. None of these plants is considered a delicacy by land snails, and it is not surprising, therefore, that over large portions of the district *Arion ater* appears to be their sole representative.

For the preparation of this list I have visited the district upon three occasions—18th till 26th September in 1910, 12th till 24th June in 1912, and from 12th till 28th September, 1914. Upon the first of these I had the assistance of Mr. Robert J. Welch, M.R.I.A., and the following places were searched:—Lough Anscaul, Lough Tooreenmartin, Coumenare, Dingle, Burnham demesne; the cliffs from Brandon Creek to Brandon Head; Gallerus and Smerwick Bay; Kilmalkedar, Inch, Ventry Bay, Sleah Head, Connor Hill, Cloghane and Brandon Mountain; the woods at Fermoy House; Stradbally and Castlegregory. On my second trip I visited the Great Blasket and Beginish; Dingle, Dunquin, Ventry, Kilmalkedar, Brandon Head, Connor Hill, Cloghane and Brandon Mountain, Stradbally and Castlegregory; and upon my third and last visit I worked Burnham and Dingle; Ventry, Smerwick, Sybil Head, and Ferriters Cove; Lough Anscaul, Connor Hill, Brandon Mountain, Cloghane; Fermoy and Kilcummin Woods; and finally the gorge of the Finglass River above Camp, close to Castlegregory Junction.

Six main types of habitat occur in the district for the land species, and three for the freshwater ones. These may be tabulated as follows:—

FOR LAND SPECIES—

Type A.—Cultivated ground; roadside hedges and banks.

Type B.—Open ground; grazed by cattle and sheep, but not cultivated.

Type C.—Coastal sandy areas ; dunes or flats.

Type D.—Woodland ; native scrub or plantation.

Type E.—Cliffs, with rank, though low-growing, vegetation.

Type F.—Marsh-land ; edges of swamps and coastal lakes.

FOR FRESHWATER SPECIES—

Type G.—Moving water ; rivers and streams.

Type H.—Still water ; lakes and tarns.

Type I.—Stagnant water ; marshes and bog-pools.

The following lists will show at a glance the character of the molluscan fauna inhabiting each type.

TYPE A.—Field at Castlegregory Junction :—*Limax maximus*, *Agriolimax agrestis*, *Hyalinia nitidula*, *Pyramidula rotundata*, *P. rupestris*, *Hygromia rufescens*, *Helix nemoralis*, *Cochlicopa lubrica*, *Vertigo pygmaea*, *Pupa cylindracea* and *Clausilia bidentata*.

From fields near Dingle :—*Limax maximus*, *L. arborum*, *Agriolimax agrestis*, *Milax Sowerbyi*, *Hyalinia cellaria*, *H. alliaria*, *H. radiatula*, *Arion ater*, *A. subfuscus*, *A. circumscriptus*, *Pyramidula rotundata*, *Vallonia pulchella*, *Helicella intersecta*, *Hygromia hispida*, *H. rufescens*, *Helix nemoralis*, *H. aspersa*, *Pupa cylindracea*, *Vertigo pygmaea*, *Clausilia bidentata* and *Carychium minimum*.

TYPE B.—The fauna of the open ground has already been referred to on the preceding page. It consists chiefly of *Arion ater* and *Limax arborum*, with *Hyalinia alliaria*, *H. crystallina*, *Arion intermedius*, *Arion subfuscus*, and possibly *Limax cinereo-niger*.

TYPE C.—From dunes below the old church at Stradbally :—*Agriolimax agrestis*, *Vallonia pulchella*, *Helicella itala*, *H. intersecta* (large form), *Helix nemoralis*, *H. aspersa*, and *Cochlicopa lubrica*.

From dunes at Smerwick Bay :—*Agriolimax agrestis*, *Arion ater*, *Vallonia pulchella*, *Helicella itala*, *H. virgata*, *H. intersecta* (small form), *H. barbara*, *Helix aspersa*, *H. nemoralis*, *Cochlicopa lubrica* and *Vertigo pygmaea*.

From sandy area east of Dingle Harbour—*Agriolimax agrestis*, *Hyalinia pura*, *Arion ater*, *Vallonia pulchella*, *Heli-*

cella itala, *H. intersecta* (small form), *Helix aspersa*, *H. nemoralis*, *Cochlicopa lubrica*, *Pupa muscorum* and *P. cylindracea* (type and var. *anconostoma* taken under the same stones).

TYPE D.—From woods at Burnham House:—*Limax maximus*, *L. arborum*, *Agriolimax agrestis*, *Hyalinia cellaria*, *H. alliaria*, *H. nitidula*, *H. pura*, *H. crystallina*, *Zonitoides excavatus*, *Arion ater*, *A. intermedius*, *A. hortensis*, *A. circumscriptus*, *Euconulus fulvus*, *Pyramidula rotundata*, *Hygromia hispida*, *Helix nemoralis*, *Cochlicopa lubrica*, *Pupa anglica*, *P. cylindracea*, *Clausilia bidentata*, *Carychium minimum*.

From woods in the gorge of the Finglass River:—*Limax maximus*, *L. arborum*, *Agriolimax agrestis*, *Hyalinia cellaria*, *H. alliaria*, *H. nitidula*, *H. pura*, *H. radiatula*, *H. crystallina*, *Zonitoides excavatus*, *Arion ater*, *A. subfuscus*, *A. intermedius*, *A. hortensis*, *A. circumscriptus*, *Pyramidula rotundata*, *Acanthinula aculeata*, *Hygromia granulata*, *H. rufescens*, *Helix nemoralis*, *Cochlicopa lubrica*, *Pupa anglica*, *P. cylindracea*, *Balea perversa*, *Clausilia bidentata*, *Carychium minimum* and *Acicula lineata*.

From woods at Kilcummin and Fermoy:—*Limax maximus*, *L. arborum*, *Agriolimax agrestis*, *Vitrina pellucida*, *Hyalinia alliaria*, *H. nitidula*, *H. pura*, *H. radiatula*, *H. crystallina*, *Zonitoides excavatus*, *Arion ater*, *A. subfuscus*, *A. intermedius*, *A. circumscriptus*, *Sphyradium edentulum*, *Punctum pygmaeum*, *Pyramidula rotundata*, *Acanthinula aculeata*, *A. lamellata*, *Hygromia fusca*, *Helix nemoralis*, *Cochlicopa lubrica*, *Vertigo substriata*, *Pupa anglica*, *P. cylindracea*, *Clausilia bidentata*, *Carychium minimum*.

TYPE E.—From the cliffs of Knocknabreestee, Brandon Head, at from 900 to 1,200 feet altitude:—*Agriolimax agrestis*, *Vitrina pellucida*, *Hyalinia cellaria*, *H. alliaria*, *H. nitidula*, *H. pura*, *H. radiatula*, *H. crystallina*, *Euconulus fulvus*, *Arion ater*, *A. subfuscus*, *A. intermedius*, *Sphyradium edentulum*, *Pyramidula rotundata*, *Cochlicopa lubrica*, *Clausilia bidentata*, *Vertigo substriata*, *Pupa anglica*, *P. cylindracea* var. *anconostoma*, and *Carychium minimum*.

From the cliffs of Connor Hill, at 1,300-1,400 feet above sea level:—*Limax arborum*, *Agriolimax agrestis*, *A. laevis*,

H. alliaria, *H. pura*, *H. radiatula*, *H. crystallina*, *Euconulus fulvus*, *Arion ater*, *A. intermedius*, *A. circumscriptus*, *Sphyradium edentulum*, *Pyramidula rotundata*, *Hygromia fusca*, *Clausilia bidentata*, with *Limnaea truncatula*.

TYPE F.—From the great marsh behind the sand dunes at Stradbally:—*Agriolimax agrestis*, *A. laevis*, *Hyalinia nitidula*, *H. radiatula*, *H. crystallina*, *Euconulus fulvus*, *Zonitoides nitidus*, *Arion ater*, *Punctum pygmaeum*, *Pyramidula rotundata*, *Hygromia hispida* (rare), *H. granulata* (common), *Vallonia pulchella*, *Cochlicopa lubrica*, *Vertigo antivertigo*, *V. pygmaea*, *Pupa anglica*, *P. cylindracea*, *Carychium minimum*, and *Succinea Pfeifferi*.

TYPE G.—From the Owenmore at Cloghane:—*Limnaea pereger*, *Ancylus fluviatilis*, and *Margaritana margaritifera*.

TYPE H.—From tarns in Coumaknock, Brandon Mountain, above 2,000 feet alt.:—*Ancylus fluviatilis*, *Pisidium pusillum*, *P. nitidum*, *P. obtusale*, *P. personatum*.

From Lough Cruttia, 650 feet alt.:—*Limnaea pereger*, *Ancylus fluviatilis*, and *Pisidium pusillum*.

From Lough Doon, or "the Pedlar's Lake," 1,050 feet alt., at Connor Hill:—*Ancylus fluviatilis*, *Pisidium Lilljeborgi*, and *P. obtusale*.

From Lough Anscaul, 250 feet alt.:—*Ancylus fluviatilis*, *Limnaea pereger*, *Physa fontinalis*, *Pisidium casertanum*, *P. personatum*, and *P. milium*.

From Lough Gill, Castlegregory, 14 feet alt.:—*Limnaea pereger*, *Physa fontinalis*, *Planorbis albus*, *P. crista*, *P. leucostoma*, *Paludetrina jenkinsi*, *Pisidium casertanum*, and *P. lilljeborgi*.

TYPE I.—From the pools in the marsh at Stradbally draining into Lough Gill, 14 feet alt.:—*Limnaea pereger*, *L. truncatula*, *Physa fontinalis*, *Aplecta hypnorum*, *Planorbis leucostoma*, *P. crista*, *P. albus*, *P. glaber*, *P. fontanus*, *Paludetrina jenkinsi*, *Sphacrium cornucum*, *Pisidium casertanum*, *P. subtruncatum*, *P. nitidum*, *P. personatum*, *P. pusillum*, and *P. milium*.

Previous to the year 1910 I can find no published reference to the mollusca of the promontory. In that year, almost on the eve of my first visit, Mr. J. R. le B. Tomlin recorded in the *Journal of Conchology*¹ forty-nine species which he

¹ *Journ. of Conch.*, vol. xiii., pp. 77-79, 1910.

had collected in the neighbourhood of Cloghane in the month of April of that year. In the list given below the letter T follows the names of those species found by Mr. Tomlin.

The list of species which I found on the Great and Little Blaskets in June, 1912, has already appeared in this Journal.¹

Mr. Welch has discovered several interesting MS. notes referring to the district in an interleaved copy of Wm. Thompson's Catalogue of the Irish Land and Freshwater Mollusca. This contains the book-plate of Robert Callwell, a well-known Dublin naturalist, and some of the pencil notes in it are presumably in his writing.² The first note of importance is on page 117 under the heading of *Limnaca auricularia*: "Loch Niscaul, on side of Caherconree Mountain, by Wm. Andrews." The second note on page 125 is more surprising; it reads: "P. corneus. Loch Niscaul, W. side of Caherconree Mountain. Specimens obtained from Wm. Andrews, June, '41." There are several reasons for doubting these two records. There is evidence to show that Andrews did not always attach the correct locality to the specimens which he sent to his friends. Moreover, there is no lake on the western side of Caherconree Mountain; but some nine miles to the westward is Lough Anscaul, which could easily be corrupted to read "Lough Niscaul." I presume, therefore, that this is the lake intended. It is fairly large, about half-a-mile long and nearly as broad, apparently not deep, with stony margins, clear water, and little vegetation, fed and drained by a small, rapidly flowing river. It contains *Ancylus fluviatilis*, *Limnaca pereger*, *Physa fontinalis*, *Pisidium casertanum*, *P. personatum*, and *P. milium*. Since Andrews' time the distribution of the various species has been carefully worked out, and it is now believed that *Planorbis corneus* is confined in Ireland to the eastern part of the "central plain," and it is impossible to credit that a habitat for it could be found in the district around Lough Anscaul. It does not seem probable now

¹ *I. Nat.*, vol. xxi., pp. 185-190. Plate 3. 1912.

² Other pencil notes are added later; but all these are signed H. A. H. The book appears to have passed into the hands of "H. A. H.," probably subsequent to Callwell's death.

that any large species could exist in Kerry and yet have been overlooked by the various naturalists who have collected there. Yet the occurrence of *Elona quimperiana*, a land-shell whose continental range is so similar to that of several species of plants and animals which occur in the south-west of Ireland, is not beyond the bounds of possibility. It is strange, too, that this Pyrenean shell should have a somewhat superficial resemblance to *Planorbis corneus*. Monsieur Bourguignat, in his work on the Mollusca of Brittany,¹ states that *Elona* is most common on damp days in June, and that it lives in humid and shady places under decaying timber near streams or in woods. The most likely habitat for this species would be, I imagine, in the woods round the southern shore of Caragh Lake. This is close to the spot where Andrews first discovered *Geomalacus maculosus* in the year following that mentioned in Robert Callwell's note quoted above, namely, 1842.

It will be noticed in the list given below that several of the more local shells are recorded from Glenfahan, near Sleah Head. This is in reality not a glen in the ordinary sense of the word, but merely a small gully or stream-bed cut by a tiny rivulet. In one spot for a few yards along the southern side of the stream, shaded from the sun, there is a luxuriant growth of ferns and mosses. In this habitat a true "woodland" fauna was found, the following species being noted:—*Agriolimax agrestis*, *Hyalinia cellaria*, *H. pura*, *H. radiatula*, *H. crystallina*, *Arion subfuscus*, *A. intermedius*, *Punctum pygmaeum*, *Pyramidula rotundata*, *Acanthinula aculeata*, *A. lamellata*, *Helix nemoralis*, *Cochlicopa lubrica*, *Pupa anglica*, *P. cylindracea*, *Carychium minimum*, and *Acicula lineata*. I have but little doubt that the fauna represented at Glenfahan had an almost universal distribution during the post-Glacial "Forest Period"—the climatic optimum—which is now so generally recognised to have existed.

¹ *Malacologie Terr. et Fluv. de la Bretagne*, 1860.

LIST OF SPECIES.

Limax maximus L.—(T.)—Burnham woods, Gallerus, Cloghane, Stradbally, Castlegregory Junction, Dingle, Fermoy and Kilcummin woods, Finglass Gorge and Gt. Blasket. Apparently widely distributed in the valleys, especially where woods occur or the remains of native scrub lingers in the hedge-banks. The form which prevails throughout the district is dissimilar from that which we find in the north-east of Ireland. In the latter part of the country specimens are generally spotted, but without distinct bands. In this district not only are the bands distinct, but these are made more prominent by brilliant darker spots, while the whole scheme of colouring is brighter. Mr. Tomlin's specimens from Cloghane have been referred by Mr. Roebuck to var. *sylvatica*, Morelet.

L. cinereo-niger Wolf.—(T.)—Mr. Tomlin records the type and var. *maura*, and states that he found young specimens of both "not uncommonly on Brandon Mountain at an elevation of 2,500-3,000 feet." It is curious that on my three visits to Brandon I have never been able to find a trace of this slug, though examples of *Arion ater* and *Limax arborum* have always been abundant. Nor in other parts of the promontory have I been more successful; only on the Gt. Blasket did it occur to me. Here two specimens of a rich chestnut-brown colour were taken. I have since discovered that this slug is born yellow, and in reaching its adult colouring passes through a chestnut-coloured stage at about the age of six to nine months. As one of the specimens taken on the Gt. Blasket was fully grown and the other about three-quarters grown, perhaps we have to deal here with a primitive race of the species with adolescent colouring.

[**L. flavus** L.—Found by Mr. Welch near Burnham House, at Dingle. No doubt an artificial introduction.]

L. arborum Bouch.-Chant.—(T.)—Abundant throughout the district to the summit of Brandon Mt. 3,127 feet; to 900 feet on the Great Blasket. Two well-marked forms occur. One occupies the higher ground, is small and often almost black, and has been identified by Mr. Roebuck as var. *rupicola*, Less. and Poll.; the second is confined to the valleys, especially to the areas occupied by native scrub, is very much larger and pale in colour, and considered to be typical of the species by Mr. Roebuck. The latter form is usually associated with *L. maximus*. These two forms of *L. arborum* are so divergent that I sent samples of both to Dr. A. E. Boycott, who reports that no difference in their anatomy was to be observed. In no locality have I seen these two forms associated. This species is not mentioned by Mr. Tomlin as occurring on Brandon Mountain, which is more than strange.

Agriolimax agrestis (L.).—(T.)—Common throughout the district to 1,400 feet at Connor Hill, but noticeably absent from the higher ground. Taken on both the Gt. Blasket and Beginish. Shows little variation in colour from the type.

A. laevis (Müller).—(T.)—At 500-1,000 ft. on Carriglagher cliffs, west of Lough Anscaul; Inch, rare; Connor Hill at 1,400 feet alt.; in the

marshes at Stradbally; and in a marsh near Cloghane (Tomlin). This species must be considered rare in the promontory, and was not seen by me at all on my last visit.

Milax Sowerbyi (Fér.).—Mainly in the neighbourhood of dwellings or plantations, but probably native. The prevailing form is very dark, with a reddish orange keel, thus differing from the form which is so abundant in gardens about Belfast and other towns in Ulster. In most of the latter stations the species is almost certainly an introduction. The places in the district where I have taken this slug are as follows:—Burnham and "The Grove," at Dingle; Gallerus; Ballintaggart, near Dingle; Fermoy; and at the foot of the gorge of the Finglass River.

M. gagates (Drap.).—(T.).—The presence of this slug on the Gt. Basket and on Beginish removes it at once from the suspicion of being an alien. Mr. Tomlin records it from Cloghane—both the type and var. *rava*—where I have seen it also. It is not, however, nearly so generally distributed as in some other districts on the west coast, such as West Mayo, and the only other habitats I can record for it are at Gallerus, Ventry, Stradbally, and Ferriter's Cove. The specimen previously reported by me from the summit of Brandon Mountain¹ has, I regret, turned out to be *Limax arborum*, var. *rupicola*; at the time both Mr. Welch and I were certain that it belonged to the present species.

Vitrina pellucida (Müller).—(T.).—Between 900 and 1,200 feet, on Knocknabreestee cliffs, at Brandon Head; Gallerus, and on the sandhills round Smerwick Bay; Fermoy; Carriglagher cliffs, Lough Anscaul; on the dunes near Castlegregory; on the Gt. Basket and on Beginish; and recorded by Mr. Tomlin from the neighbourhood of Cloghane. The examples from Smerwick are small, yellowish, and very globose, which is, I think, the prevailing form in the district. This shell must be regarded as distinctly rare on the promontory.

Hyalinia cellaria (Müller).—(T.).—More generally distributed than in any other district I have worked in the west of Ireland. Particularly common and large on some of the cliffs; to 800 feet on the Great Basket; at about 500 feet on the cliffs above Doon; and several shells were taken at about 1,200 feet on Knocknabreestee cliffs, at Brandon Head. This last is the highest record I possess for the species in Ireland. All the specimens belong to the *Vitrea hibernica* of Kennard.

H. alliaria (Miller).—(T.).—Generally distributed; found on the Great Basket and on Beginish; and occurs to the summit of Brandon Mountain, 3,127 feet above sea.

H. nitidula (Drap.).—(T.).—The type is widely distributed, and var. *helmi* was taken at Fermoy and on the cliffs west of Lough Anscaul. Both forms occurred on the Great Basket.

H. pura (Alder).—(T.).—Common on the promontory and also on the Gt. Basket. Two specimens of a rather peculiar form, with raised spire, small umbilicus, and a polished surface, were taken on the cliffs at Connor Hill at 1,300 feet.

¹*Proc. R. Irish Acad.*, vol. xxix., sect. B., No. 3, p. 75.

Ibid vol. xxxi., part 23, p. 48.

Hyalinia radiatula (Alder).—(T.)—Generally distributed, to 1,400 feet on Connor Hill, but not so common as the last species. Sparingly at one spot on the Gt. Blasket.

H. crystallina (Müller).—(T.)—On the Gt. Blasket and almost everywhere on the mainland, to 2,300 feet on Brandon Mountain. At Glenfahan, on Sleah Head, this shell was very common in "moss-shakings," and two forms of it are noticeable. One is greenish, with very deep whorls and minute umbilicus; the second is more white in colour, has flatter whorls, and a slightly wider umbilicus.

Zonitoides nitidus (Müller).—(T.)—Recorded from Mr. Tomlin from a marsh near Cloghane, and taken by me in the marshes at Gallerus and Stradbally. In the latter locality it appears to be common.

Z. excavatus (Bean).—This species was only discovered on the promontory on my last visit, and though common in parts of the woods at Burnham and at Kilcummin, it is extremely local. All the specimens taken at Burnham were of the type, while, on the contrary, all seen at Kilcummin belonged to the greenish form. A single specimen of the type occurred also in the gorge of the Finglass River. At Kilcummin this shell was one of the three commonest in the woods, the other two dominant species being *Pyramidula rotundata* and *Pupa anglica*. It is, therefore, more than strange that it is not more widely distributed in the district.

Euconulus fulvus (Müller).—(T.)—Recorded by Mr. Tomlin as common near Cloghane; but though frequent throughout the district, to 1,300 feet on Connor Hill, and on the Gt. Blasket, it never occurred to me plentifully.

Arion ater (L.).—(T.)—Mr. Tomlin records the vars. *castanea*, *aterrima*, and *bicolor* from the neighbourhood of Cloghane. Var. *aterrima* appears to be confined to the mountains, and near the coast is replaced by the type and the vars. *castanea* and *plumbea*. This slug was abundant on the Gt. Blasket, occurred sparingly on Beginish, and on the mainland is ubiquitous even to the summit of Brandon Mountain, 3,127 feet.

A. subfuscus (Drap.).—(T.)—Recorded by Mr. Tomlin as common at Cloghane; but appeared to me to be much rarer than in the north of Ireland, and was distinctly local in its distribution. It occurred to me at Glenfahan, at Sleah Head; at 900-1,200 feet on the cliffs at Brandon Head; in several places near Dingle; in Fermoy and Kilcummin woods; at Stradbally and Cloghane; and to 2,800 feet on Brandon Mountain, as well as on both the Blaskets visited.

A. intermedius Normand.—Generally distributed on the Blaskets and in the valleys on the mainland, and occurs to at least 2,800 feet on Brandon Mountain. The specimens taken in the last mentioned habitat were of a golden yellow colour with a brilliant orange footsole.

[**A. hortensis** Fér.—Only seen in the plantations at Burnham and by the Finglass River, near Camp. Unfortunately no specimens could be found outside these two places. Here introduced plants are to be found also; and I, therefore, regard the species as of doubtful standing in the district, and possibly introduced. This idea is strengthened by the fact that it was not taken in Kilcummin woods, which contain a much larger percentage of native trees than the two habitats mentioned above.]

- A. circumscriptus** Johnston.—(T.)—Burnham, Knockavrogeen churchyard, and The Grove, near Dingle; on the cliffs of Carrigblagher and Connor Hill to 1,400 feet; Cloghane, Finglass River, and in Kilcummin woods. Unlike the last species, this occurs frequently in uncultivated ground, and is certainly native; but, as generally is the case in western districts, it is very local.
- Punctum pygmaeum** (Drap.).—(T.)—Taken sparingly at Glentahan on Slea Head; by the old church on the dunes at Ventry Bay; at Stradbally marsh; Fermoyle and Kilcummin woods, and near Cloghane. Mr. Tomlin reports its occurrence near the latter village.
- Sphyradium edentulum** (Drap.).—(T.)—Taken commonly by Mr. Tomlin when sweeping for coleoptera near Cloghane; and by me at 200-500 feet on Carrigblagher cliffs; at between 900-1,200 feet on Knockna-breestee cliffs, Brandon Head; at 1,300 feet on the cliffs at Connor Hill; at Fermoyle, Gallerus, and on the Gt. Blasket. In the latest work on the nomenclature of British L. and F. W. Shells, by Messrs. Kennard and Woodward, this species is once more placed among the Vertiginidae and under the new name of *Columella edentula*.
- Pyramidula rupestris** (Drap.).—Thanks to the presence of limestone in the Boulder-clay along the southern shore of Tralee Bay, this species finds a habitat near Castlegregory Junction. It is no doubt prevalent in this neighbourhood between the railway and the sea.
- P. rotundata** (Müller).—(T.)—Very common on the Blaskets and in the lower parts of the mainland, and ascends to 1,400 feet on the cliffs at Connor Hill. Its apparent absence from the cliffs on Brandon Mountain is unaccountable.
- Helicella virgata** (Da Costa).—Abundant on all the dunes at the western end of the promontory—Ventry, Dunquin, Ferriter's Cove, and Smerwick—and also lives near Lough Naparka, north of Castlegregory, and on the Great Blasket. It appears absent, however, from the great dunes at Inch, from Dingle, and from the dunes between Castlegregory and Cloghane. West of Smerwick, towards Sybil Head, this shell ascends to about 250 feet, where blown sand has invaded the heathy area. As a general rule specimens are small, banded or plain yellowish brown in colour; but at Ventry and Ferriter's Cove some very large specimens are to be met with. At Ventry also it shows great colour variation, the vars. *nigrescens*, *alba*, and *leucozona* being quite common, with var. *radiata* and the common forms mentioned above. At Smerwick Bay the white-shelled variety formed a great colony on the dunes below Gallerus.
- H. itala** (L.).—(T.)—Common in all the habitats mentioned for *H. virgata* and also occurs at Inch, Dingle, Cloghane, and Stradbally. Mr. Tomlin records the vars. *instabilis* and *leucozona* from the last locality, and these are the prevailing forms throughout the promontory. On the Gt. Blasket the form of this shell differs from any I have taken elsewhere in Ireland, the coiling of the last whorl being quite excentric.
- H. intersecta** (Poiret) = *H. caperata* Mont.—(T.)—Like *H. itala*, the form of this species taken on the Gt. Blasket shows slight insular peculiarities, being very compact, with a minute umbilicus and sharply

conical spire. The species occurs also on Beginish, and at Smerwick, Gallerus, Ventry, Dingle, Inch, Cloghane, and Stradbally. Mr. Tomlin refers to it as small in the Cloghane neighbourhood; but the large form is abundant on the dunes near Stradbally and in several other places.

H. barbara (L.).—Much more local than the two preceding species, and it is confined to the western end of the promontory and the Gt. Blasket. It is abundant at Smerwick, Ventry, and Ferriters Cove, where the beautiful var. *strigata* is the commonest form, examples from Smerwick being very pronouncedly striped. Unlike *H. virgata* this shell does not appear to inhabit the coast of Kerry north of Tralee, nor did it occur to me in the Castlegregory area.

Hygromia fusca (Mont.).—Among *Luzula* in a wet gully, at 1,400 feet, on the cliffs at Connor Hill, and in the woods at Fermoy. Not seen elsewhere; but no doubt exists in other similar situations. In the Finglass River gorge an attempt to beat this shell out of the great clumps of *Luzula* and ferns only produced *H. granulata* and *H. rufescens*.

H. granulata (Alder).—Abundant in the marshes north of the old church at Stradbally, at the roots of nettles, grasses, and reeds. Also exceptionally common in the gorge of the Finglass River. Many hundreds were beaten out of the vegetation into an open umbrella in a few minutes, in all stages of growth.

H. hispida (L.).—(T.)—Frequent about Dingle and Cloghane; and also seen at Burnham, Gallerus, Ventry old church, Fermoy, and Stradbally. Nevertheless, this shell is exceptionally rare compared with its occurrence in most other parts of Ireland. The form which occurs is flat, very hairy, dark brown; but does not have the large open umbilicus of the flat form which occurs in the eastern counties.

[**H. rufescens** Auct. = *Hygromia striolata* (Pfeiffer).—(T.)—Its absence from open ground and its general occurrence near habitations, coupled with its apparent absence from the older deposits in England, the evidence of its recent extension of range in Ireland, and its present geographical distribution on the continent, have led me to doubt that this species is anywhere native in Ireland.¹

Mr. R. A. Phillips tells me that he thinks it may be native in some parts of the south of Ireland; but there can be no question of its introduction into the north-eastern counties in recent years. In the present district I found it in the village of Ventry, in gardens and on ditches about Cloghane; in the ruins of the old church at Stradbally; in the ditches about Castlegregory Junction and Camp; about Dingle on roadside ditches for at least a mile outside the town; in parts of the plantations at Burnham; and in the ruins of a cottage at Ballintaggart, near Dingle. All the above records would be consistent with the theory of its being an alien of perhaps 250 years' standing in Ireland. In the gorge of the Finglass River, however, its presence is more perplexing. In this locality it occurred, though sparingly, on *Luzula* and other tall plants, with an undoubtedly

¹ *Proc. Malacol. Soc. London*, vol. x, pp. 290-291.

indigenous fauna. Along the top of this wood, which has at some time been extensively planted, runs a road on the ditches of which *H. rufescens* is common and it is possible that it may owe its origin in the woods to this source. I prefer, therefore, still to consider its standing in the promontory as "probably introduced by man."]

Acanthinula aculeata (Müller).—(T.)—Apparently rare, and only seen by me at Glenfahan near Slea Head, in Fermoyle woods, and in the gorge of the Finglass River. It is recorded by Mr. Tomlin for the Cloghane district.

A. lamellata (Jeffreys).—Even more restricted in its range than *A. aculeata*. It occurred abundantly, however, in moss shakings from Glenfahan, and was seen also in Fermoyle woods. Although searched for carefully in the Finglass gorge and in Kilcummin woods, no specimens could be found.

Vallonia pulchella (Müller).—(T.)—Common on most of the sandy areas, such as Ventry, Dingle Harbour, Inch, Smerwick, and on the Blaskets. In the marshes near Stradbally it was even more abundant. Reported from the neighbourhood of Cloghane by Mr. Tomlin.

V. costata (Müller).—(T.)—As is usual in the west of Ireland, this species was not so common as the last and appears to be confined to the dunes between Stradbally and Cloghane. Mr. Tomlin records it for the latter place, and my only record for it was on the dunes opposite Fermoyle House.

Helix aspersa Müller. —(T.)—In great abundance near the sea-coast, wherever there is sandy soil, and sometimes extending its range inland for a considerable distance, as at Anascaul and near Dingle. On the Gt. Blasket and Beginish it is locally abundant. In the central counties in Ireland this shell has the appearance of being a very recent immigrant, and probably owes its origin there to man. In the maritime areas, and more particularly in those of the western counties, it is undoubtedly a very old resident, and, I think, unquestionably native. The natural range of this species in Great Britain is obscured by the inclusion of "contaminated" records; but it probably resembles that of *Helicella barbara*.

H. nemoralis Müller. —(T.)—Has a similar distribution in the promontory to *H. aspersa* and the most inland locality in which I have taken it is on the cliffs of Carriglagher, west of Lough Anascaul. Many beautiful colour forms occur, more particularly on the dunes at Inch. In certain localities some forms occur to the exclusion of others, as, for instance, along the southern shore of the entrance to Dingle Harbour, where yellow forms occur almost exclusively. Here also the band formulae 00300 and 00345 predominate. The former band formula is characteristic of the whole district, and in many habitats the third band is twice the normal thickness. In the woods of the Finglass gorge and at Burnham the customary fragile woodland form occurs. In several places, but particularly in the neighbourhood of Kilmalkedar, very large specimens are to be found, exceeding 25 mm. in diameter.

[*Helix hortensis* Müller.—Specimens from Dingle are reported (*Journal of Conchology*, vol. xiii., p. 160) as having been exhibited at a meeting of the Conchological Society by Mr. E. Collier. Mr. Collier, however, informs me that he has no examples of this species from Dingle; but that at the meeting referred to he exhibited white-lipped *H. nemoralis*, sent to him by Mr. Welch, from the Dingle promontory [Inch Sandhills]. The mistake is evidently due to a slip, and need not have caused confusion but for the fact that it has been copied and appears in Mr. Taylor's *Mon. of the L. and F. W. Moll. of the British Isles*, vol. iii., p. 363. Moreover on the map, plate xxix., Co. Kerry has been coloured red to indicate that Mr. Taylor has seen the shells and verified the record, which appears to be an error under the circumstances.]

Cochlicopa lubrica (Müller).—(T.)—Common throughout the low lying parts of the promontory and on the Gt. Blasket, and also lives on some of the cliffs to at least 1,400 feet.

Pupa anglica (Fér.).—(T.)—On the Gt. Blasket and throughout the promontory, where suitable conditions occur. Particularly abundant in Kilcummin woods and in the neighbouring marshes near Stradbally. All three colour forms occur, but the *pallida* and *alba* forms are confined to the shaded woodland areas or where there is a rich mossy vegetation.

P. cylindracea (Da Costa).—(T.)—Slightly more widely distributed than *P. anglica*, and as a rule more plentiful than the latter, where the two occur together. On wet cliffs and on similar spots, which appear rather unfavourable to the growth of the species, the var. *anconostoma* is generally the prevailing form. On the southern shore of Dingle Harbour, by the old watch tower, I was surprised to find this dwarf form and the type together, under the same stones, and apparently without an intermediate form. On this sandy, open, sunny spot conditions appeared most favourable.

P. muscorum (L.).—(T.)—Recorded by Mr. Tomlin from the Cloghane district as occurring "under stones near the sea." The only two habitats in which I found it alive were on the sands to the south of Dingle Harbour and on Lady's Island, between Cloghane and Brandon. Being unable to find Mr. Tomlin's habitat for it, I made a special journey to Lady's Island at low tide, where I was pleased to find it living, as around the coast of County Down this species occurs frequently on such islets, although it has apparently ceased to live on the mainland opposite. Its extermination on the mainland in such cases is probably partly due to cultivation and partly to the recent inroads of the sea. Lady's Island is a very small rocky islet, covered with blown sand, and is only cut off from the mainland at high tide.

Vertigo antivertigo (Drap.).—(T.)—Abundant in marshy places at Smerwick Bay, Ventry Bay, Cloghane, and Stradbally, but not seen elsewhere.

V. substriata Jeffreys.—(T.)—Perhaps the most widely scattered member of the genus in the district, occurring from sea-level near Fermoy to an altitude of nearly 1,200 feet on Knocknabreestee cliffs, at Brandon Head. Unlike the next species and *V. antivertigo* it never

was taken in quantity. Besides the above stations it was found at Smerwick Bay, on the cliffs of Carriglagher, on the Gt. Blasket, and near Cloghane (Tomlin). The specimens collected on the great sea-cliffs of Knocknabreestee appear to be of a depauperate form, and bear the same relation to the type that the var. *anconostoma* bears to typical *Pupa cylindracea*. In these dwarf examples only four denticles appear in the aperture of the shells, instead of the usual six. One denticle is situated on the body-whorl, one on the columella, and two on the outer lip; occasionally there is a trace of a second denticle on the body-whorl.

- V. pygmaea** (Drap.).—(T.).—Generally distributed at low elevations, but was not seen on the Gt. Blasket nor in several stations where *V. substriata* occurred. In all the marshy areas it was abundant, associated with *V. antiverigo*. In the neighbourhood of Dingle and Cloghane it was frequently common on the tops of dry ditches and in similar places. By the roadside on Slea Head many specimens were taken also, and it was found associated with the last species on the cliffs of Carriglagher. In the last habitat it was proved to live to nearly 700 feet alt., its highest recorded station in the district.
- V. angustior** Jeffreys.—(T.).—The abundance of this *Vertigo* in the earlier Holocene deposits of Ireland and England, compared with its extreme rarity in the living state, is a fact which will always lead to speculation regarding the causes which have led up to its present scarcity. Mr. Tomlin reports this species as "extremely local, but not uncommon under stones on the bank of a small stream, close to where it entered the sea." One specimen was taken by me under a stone on the dunes opposite Fermoy House, which cannot be far from the habitat mentioned by Mr. Tomlin; and three specimens were taken by me from a similar position on the dunes at Ferriter's Cove. No doubt further search would have revealed additional specimens; but in both instances I felt satisfied with proving that in this, as in other western districts, the species was not yet extinct. All my specimens are darker in colour than any I have seen previously; they are as dark, in fact, as normal *V. pygmaea*.
- Balea perversa** (L.).—(T.).—At Burnham and several other places near Dingle; in the gorge of the Finglass River; on walls at Castlegregory; Gallerus; and on the ruins of the old church at Stradbally. Mr. Tomlin reports having beaten many specimens from Gorse bushes in the Cloghane district, and remarks upon the frequency of its association with this plant.
- Clausilia bidentata** (Ström.).—(T.).—On the Gt. Blasket and Beginish, and generally distributed on the mainland to at least 1,200 feet, at which height it is abundant on the roadside wall by the road from Cloghane to Connor Pass. On the tombs in the graveyard at Stradbally this shell was more abundant than I have ever seen it elsewhere.
- Succinea Pfeifferi** Rossm.—(T.).—In the marshes at Stradbally, Inch, Ventry, and Smerwick Bays; and also by the shore of Lough Anascaul. Reported by Mr. Tomlin from marshy ground near the shore in the Cloghane district. All my specimens belong to the small obese form

prevalent in most parts of the west of Ireland, once the limestone districts are left behind. The larger form, with more impressed suture, elongated spire, and heavier shell, is considered by Mr. Kennard to be referable to a distinct species under the name of *Succinea Schumacheri* Andreae.

Carychium minimum Müller.—(T.)—Common in all damp places, on the Gt. Blasket, and on the promontory, to about 1,200 feet altitude; but not seen on the higher cliffs, such as those at Connor Hill and Brandon.

Ancylus fluviatilis Müller.—(T.)—Lough Anscaul; Lough Tooreenmartin, 1,200 ft.; Coumenare Lakes, 1,100-1,350 feet; and in the lakes of Coumaknock, on Brandon Mountain, to 2,300 feet, at which height the highest of these lakes lies. The form which occurs in these mountain tarns is exceptionally fragile, as Mr. Tomlin has pointed out. This is perhaps due to the low temperature of the water and to the absence of lime. Two visits to Lough Avoonane failed to reveal the presence of this species there, which shows that it is not universally distributed in the district.

Limnaea pereger (Müller).—(T.)—This usually ubiquitous species is not by any means universally distributed in the district, but is found in most of the lower-lying lakes and in the coastal marshes. It was taken at Milltown, near Dingle; in the marshes at Smerwick, Inch, and Stradbally; in Lough Gill and Lough Naparka, near Castlegregory; in Lough Anscaul, Lough Avoonane, Lough Cruttia (650 feet), and in Clogharee Lough. I was greatly disappointed not to find examples of the *Limnaea involuta* group in the mountain tarns, such as those on Brandon Mountain, or Lough Doon or Lough Tooreenmartin. An extreme lacustrine form of *Limnaea pereger* does occur, however, in the five lakes mentioned last in the list given above. This form has the regular striation which is characteristic of most lake forms of the species.

L. palustris (Müller).—(T.)—Common in the marshes at Smerwick Bay, below Gallerus, and reported from the Cloghane district by Mr. Tomlin, but not seen elsewhere.

L. truncatula (Müller).—(T.)—Generally distributed over the promontory, and in one spot on the Gt. Blasket it occurred abundantly. It ascends the mountains to a considerable elevation, being observed on Brandon Mountain as high as 750 feet; on the cliffs west of Lough Anscaul to 1,100 feet; and on those of Connor Hill to 1,200 feet.

Planorbis albus Müller.—Confined to the marshes near Stradbally and to Lough Gill, on the northern side of the peninsula.

P. glaber Jeffreys=*Planorbis laevis* Alder.—A single dead shell occurred in Lough Naparka. This was on my second visit to the district, when all the lakes were unworkable owing to the heavy rain. Also taken in the marshes west of Lough Gill.

P. crista (L.).—Fairly common in parts of the marshes at Stradbally, and also occurs in Lough Gill.

P. leucostoma Millet=*Planorbis spirorbis* Auct. (?) Linné.—(T.)—The only member of the genus which occurs along the southern shore of the

promontory or at its western end. It occurred at Milltown, near Dingle; in the marshes at Smerwick, Inch, and Ventry; also in Lough Gill and the marshes west of this lake. Mr. Tomlin reports it from the Cloghane district. The specimens from Milltown somewhat resemble the real *Planorbis spirorbis* of continental authorities, but possess a well marked reflected lip, which appears to be the chief characteristic of the present species, and the one from which it derives its name.

P. fontanus (Lightfoot).—Common in the marshes west of Lough Gill, near Stradbally, but not seen elsewhere.

Physa fontinalis (L.).—Occurred in the habitats mentioned for the last species, and in Lough Gill; also in Lough Anscaul, on the southern side of the main watershed of the peninsula.

Aplecta hypnorum (L.).—(T.).—Abundant in parts of the Stradbally marshes and in the shallow marshy fringe of Lough Naparka. My specimens from the latter place are the largest I have ever taken. Reported by Mr. Tomlin from the Cloghane district.

Paludestrina Jenkinsi Smith.—One of the most widely-distributed water-snails in the promontory, and was taken at Milltown, near Dingle; in Lough Gill, and in the coastal marshes and drains at Smerwick, Inch, and Stradbally.

P. stagnalis (Baster).—Under stones by the embankment, opposite Fermoy House, and no doubt occurs elsewhere.

Acicula lineata (Drap.).—Not so generally distributed as in most parts of the west of Ireland, but no doubt frequent in shady mossy places if specially searched for. In Glenfahan, a little stream-cut gully, near Sleah Head, this shell occurred in wonderful profusion. A few bags of moss yielded over two hundred specimens of the brown and white forms; one of the latter was found to have the spire reversed. This species was taken also in the gorge of the Finglass River and in the woods at Fermoy.

Margaritana margaritifera (L.).—Very common in the Owenmore, which drains the valley above Cloghane. After a spate, in September, 1914, many of these shells were found to have been washed from out of their hiding places and cast up on the banks or left in shallow pools.

Sphaerium corneum (L.).—Confined to the marshes west of Lough Gill, near Stradbally.

Psidium subtruncatum Malm.—Only taken in the marshes at Stradbally, and apparently confined to the lower ground.

P. casertanum Poli.—Not nearly so common as in West Mayo and other western districts, and was seen only in Lough Anscaul; in bog-pools near this lake; in the marshes at Smerwick Bay; and at Stradbally.

P. obtusale Pfeiffer.—Common in the higher tarns in Coumaknock, on Brandon Mountain to 2,250 feet; in Lough Tooreenmartin, Lough Doon, Lough Nalackan; and also at sea-level in the marshes at Inch.

P. nitidum Jenyns.—Ballinloghig; Stradbally marshes; marshes below Gallerus, in Smerwick Bay; and in the tarns in Coumaknock to 2,300 feet.

P. pusillum (Gmelin).—(T.).—Under stones on the cliffs of Knockabreestee, at Brandon Head; in the marshes at Stradbally; and in the tarns

of Coumaknock, to 2,300 feet. This is the only *Pisidium* mentioned by Mr. Tomlin in his list.

Pisidium personatum Malm.—Occurred in what is probably the highest possible habitat for a freshwater shell in Ireland: St. Brendan's well on the summit of Brandon Mountain! Also taken in the tarns below this, in Lough Anscaul, and in the marshes at Stradbally.

P. milium Held.—Lough Anscaul; in the marshes at Stradbally; and in the Coumaknock tarns, to 1,675 feet.

P. Lilljeborgi Clessin.—Common in Lough Tooreenmartin, 1,200 feet; Coumenare Lakes, 1,100-1,350 feet; Lough Doon, 1,050 feet; Lough Nalackan in Coumaknock, Brandon Mountain, at 1,150 feet; and also in Lough Gill, which is but fourteen feet above sea-level.

All the above records for the *Pisidia* are on the authority of Mr. B. B. Woodward, and I have to thank him once more for his great kindness in naming specimens sent to him. The record for *P. pusillum* from the cliffs near Brandon Head, and that for *P. personatum* from St. Brendan's well, show how comparatively easy it must be for these species to cross the barriers which divide one river basin from another. The construction of the well above mentioned precludes, I think, all possibility of the specimens having been carried by birds. When returning my specimens Mr. Woodward remarked on the fragility of the shells from the tarns in Coumaknock, on Brandon Mountain. My remarks under *Ancylus fluviatilis* are referable to these shells also.

Several of the above species, although generally distributed throughout the promontory, are much less plentiful than we find them in the north of Ireland. This is particularly noticeable in the cases of *Vitrina pellucida* and *Hygromia hispida*, as well as in those of *Agriolimax laevis*, *Arion subfuscus*, and *A. circumscriptus*. The presence of so many freshwater species, belonging to the group which has its headquarters, in Ireland, in the central plain, is of interest. Their range in the district is a limited one, however, and none but *Physa fontinalis* has been found beyond the long tract of marsh-land which lies behind the dunes, from Fermoy to Castlegregory. Eastward of the latter place along the southern shore of Tralee Bay there is much low-lying marshy country, and between Tralee and the basin of the Shannon there is also no great barrier to dispersal. Hence, I think, we may trace their origin. As stated above,

only *Physa fontinalis* has penetrated further than the Castlegregory marshes, although extensive marshes, similar to those near Castlegregory, exist at Smerwick and in other places. This shell, alone, of the "central" species, occurs in Lough Anscaul, which lies to the south of the main watershed of the peninsula.

There are but few absentees from the list which need be referred to. *Geomalacus maculosus* was not found, although carefully searched for, in suitable weather, which is strange when one considers its abundance at Caragh Lake, across the waters of Dingle Bay. *Hyalinia lucida* does not appear to have been introduced so far, but it is plentiful at Tralee in the town rubbish-heaps; and its introduction with merchandise to Dingle and other towns is not likely to be long delayed. Once introduced it will no doubt follow in the footsteps of *Hygromia rufescens* and spread rapidly. *Succinea putris* does not appear to have penetrated further west than Killarney, and *S. oblonga* could not be found. The semi-marine species *Phytia myosotis*, *Ovatella bidentata* and *Otina otis* were not searched for. *Planorbis umbilicatus* occurs in the coastal marshes north of Tralee, near Ardfert, but was not seen nearer to the present district. The nearest record for *Planorbis contortus* is the Gap of Dunloe, while *Valvata piscinalis*, *V. cristata*, and *Bithynia tentaculata* are not known to live nearer than the Shannon basin. All the available evidence, therefore, points to the conclusion that the bulk of the freshwater molluscan fauna of the promontory has spread during comparatively recent times from the adjoining mainland. Whether this migration is still going on future work alone can show; but I am inclined to think that will prove to be so.

DEPOSITS CONTAINING LAND SHELLS.

Considering the great amount of blown sand which is to be found on all sides of the promontory, deposits containing land-shells must be numerous; but I had practically no time to spare on any of my visits to search for these, let alone to work them. Along the southern shore of Dingle Harbour there are small deposits, which appear to contain

shells, some of which are derived from much older dunes than those existing at the present day. At Smerwick Bay, resting on Boulder-clay, there is a sandy cliff containing *Helix nemoralis*, which, if properly worked, should give good results. At the present time this deposit is being eaten into by the sea. At Ferriters Cove one section along the shore showed a blackish band of perhaps a foot in height, a sample of which I brought home and washed, with the result given below. I think that this black band, of which a mere remnant had been preserved by the more modern blown sand, was of the same age as that above referred to at Smerwick. If samples could be obtained from the marshy area near Stradbally, I imagine that a large list of land and freshwater species would be found in them. It seems probable that the "black bands," such as that at Ferriters Cove, have been formed under conditions somewhat similar to those which prevail along the marshes at Stradbally; but the general absence of freshwater species, together with the absence of such moisture-loving shells as *Zonitoides nitidus* and *Vertigo antivertigo*, shows that the conditions were not identical. In many respects the fauna of these "black bands" resembles that of the little gully at Glenfahan; but here again there is the absence of *Acanthinula lamellata* to account for. It will be noticed, however, that none of the xerophile species (*Helicella itala* group) occur in the black band at Ferriters Cove, although all are common in the more modern deposits which cover it. In his paper, now nearing completion, on the Irish fossil mollusca, Mr. A. S. Kennard will deal more fully with these deposits and the probable changes of climate which are connected with them.

LIST OF SPECIES CONTAINED IN THE DEPOSITS.

Deposit in blown sand at Dingle Harbour:—*Hyalinia crystallina*, *Vallonia pulchella*, *Helicella itala*, *Cochlicopa lubrica*, *Pupa muscorum*, *P. cylindracea*, *Vertigo pygmaea*, and *V. angustior*. All but the last named shell still live in in the vicinity; but the shells of this species probably have been derived from some older deposit now destroyed.

From a "black band," beneath blown sand, and resting on Boulder Clay, at Ferriters Cove:—*Milax* sp. (? *M. gagates*), *Hyalinia alliaria*, *H. nitidula*, *H. pura*, *H. radiatula*, *H. crystallina*, *Euconulus fulvus*, *Arion* sp., *Punctum pygmaeum*, *Pyramidula rotundata*, *Vallonia pulchella*, *Acanthinula aculeata*, *Helix nemoralis*, *Cochlicopa lubrica*, *Pupa anglica*, *P. cylindracea*, *P. muscorum*, *Vertigo pygmaea*, *V. angustior*, *Clausilia bidentata*, *Carychium minimum*, and *Acicula lineata*.

In order to work out such a deposit as that at Ferriters Cove, much time would be required for sieving and washing on the spot. The quantity of sand which one person can carry for a few miles is limited, and thus the above list must be regarded as anything but complete. To show how hard it is to tell if blown sand contains any shells or not, I may add that the list from Dingle Harbour was compiled after washing sand which did not appear to contain any shells but *Cochlicopa*. I am now aware that I must have overlooked dozens of deposits in this and other districts merely because the shells did not appear to be numerous and only a few common species were to be seen on the exposed surface. In future I hope to be more careful, and here desire to pass on the warning to others.

Ballywilliam, Donaghadee.

MYXOMYCETES FROM THE DINGLE PROMONTORY.

BY MARGARITA D. STELFOX, B.SC., A.R.C.SC.I.

DURING a visit to the Dingle promontory, Co. Kerry, in September, 1914, I collected some specimens of Myxomycetes, or Mycetozoa, and forwarded them to Miss G. Lister, F.L.S., who when returning them to me suggested that the list should be published in the hope that it might stimulate others to search. In her report of the Clare Island Survey¹ on the Mycetozoa, Miss Lister mentions that Mr. F. W. Evans made a collection of ten species during short holidays in the neighbourhood of Killarney and

¹ *Proc. R.I. Acad.* vol. xxxi., part 63, 1912.

Glengarriff, in August, 1898, and August, 1902. He obtained the following species :—

SPECIES HITHERTO RECORDED FOR THE SUB-PROVINCE M₁.

Ceratiomyxa fruticulosa Macbr.—Killarney (N. Kerry) and Glengarriff (W. Cork).

Fuligo septica Gmelin.—Killarney.

Stemonitis fusca Roth.—Killarney and Glengarriff.

S. splendens, Rost. var. *Webberi*.—Killarney.

Cribraria aurantiaca Schrad.—Killarney.

Lycogola epidendrum Fries.—Killarney.

Trichia affinis De Bary.—Killarney.

Arcyria cinerea Pers.—Glengarriff.

A. denudata Sheldon.—Glengarriff.

A. incarnata Pers.—Glengarriff.

The above are apparently all the recorded species for the sub-province M₁, with the exception of that for *Stemonitis splendens* from Glengarriff by Mr. W. L. W. Eyre. One would have expected a much larger list, especially from the neighbourhood of Killarney, as the woods in that district ought to prove an ideal hunting ground.

The Dingle promontory, contrasted with Killarney, is markedly unfavourable, as there are very few woods, and where these do occur they are small in extent and often but recently planted. The places visited include the woods at Burnham and The Grove near Dingle; Fermoy and Kilcummin Woods, near Cloghane; and the Finglass River gorge, near Castlegregory Junction. Of these, much the best was Kilcummin Wood, where there was a quantity of undisturbed fallen timber and some native scrub, such as Holly, etc. The list of species collected is as follows¹ :—

LIST OF SPECIES COLLECTED IN DINGLE PROMONTORY.

Ceratiomyxa fruticulosa Macbr.—On fallen Sycamore, Ballintaggart, near Dingle. Fermoy and Kilcummin Woods, near Cloghane.

* *Physarum viride* Pers.—Kilcummin Wood.

* *P. nutans* Pers.—Kilcummin Wood.

** *P. virescens* Ditm., var. *nitens* Lister.—On Ivy leaves and moss, Kilcummin Wood.

Fuligo septica Gmelin.—Gorge of the Finglass River and Burnham Wood.

* *Didymium nigripes* Fries, var. *xanthopus* Lister.—On rotting cabbage stalk, Cloghane.

¹ Species new to M₁ are marked by an asterisk: those new to Ireland by two such signs.

- Stemonitis fusca** Roth.—Finglass River gorge, Burnham Wood, and Kilcummin Wood.
- S. splendens** Rost., var. **Webberi** Lister.—On fallen Blackthorn branches, Kilcummin Wood.
- ** **S. confluens** Cooke and Ellis.—The Grove, Dingle. Miss Lister remarks that the specimen had dried too rapidly, "but with soaking in water the irregular columella and capillitium and dark warted spores, 9μ diam., are quite distinct."
- *? **S. herbatica** Peck.—Fermoy Wood. Miss Lister considers that this specimen, which is badly developed, may be a dwarf form of *S. herbatica*, "since the regularly spinulose spores, $7-9\mu$ diam., recall those of *S. herbatica*, though they are larger than usual. One sporangium shows a certain amount of fairly close surface net. This species has only been collected in Ireland at Glencar, Co. Leitrim, July, 1914.¹
- * **Comatricha nigra** Schroet.—Burnham Wood and Fermoy Wood.
- * **C. typhoides** Rost.—Growing with *Arcyria denudata* on a large Ash stump in a field near Castlegregory Junction.
- Dietydium cancellatum** Macbr.—Gorge of the Finglass River (type and var. *fuscum*, Lister) and Kilcummin Wood.
- Lycogola epidendrum** Fries.—Finglass River gorge and Fermoy Wood.
- Trichia affinis** De Bary.—Finglass River gorge.
- * **T. persimilis** Karsten.—Finglass River gorge and Burnham Wood.
- * **T. varia** Pers.—Burnham Wood.
- * **T. decipiens** Macbr.—Burnham Wood and Fermoy Wood.
- Arcyria denudata** Sheldon.—Finglass River gorge, Burnham Wood, and Fermoy Wood.
- A. incarnata** Pers.—On a fallen gate post near Lough Anscaul.

Two of the above species, *Physarum virescens* and *Stemonitis confluens*, are new to Ireland; eleven, including the two just mentioned, are new to the sub-province M_1 ; while all the species listed are now first recorded for the vice-county South Kerry, for which no previous records appear to exist.

Ballywilliam, Donaghadee.

¹ See *Proc. Belfast Nat. Field Club* (2), vol. vii., part 2.

CORRESPONDENCE.

LAMARCK'S "ZOOLOGICAL PHILOSOPHY."

Permit me to thank the Editors of the *Irish Naturalist* for the review¹ of my translation of Lamarck's "Philosophie Zoologique." The reviewer, who signs himself "G.H.C.," writes with such conspicuous ability and fairness that I have no sort of ground for complaint. But there is one point in his article, which seems to me to be so important as to justify me in seeking a small corner of the magazine's valuable space. G.H.C. criticizes me for stating that the rise of materialism is proportionate to the advance of civilization: and he considers that the autumn of 1914 was an unfortunate time for the promulgation of such an opinion.

Now I wish to point out that I did not use the word "materialism" in the sense given to it by shallow journalists, but in its correct sense. So far from the present war being a product of materialism, it arises, in my opinion, from a complete overthrow of all materialistic principles; for it necessarily involves a heavy diminution of material prosperity to all the nations concerned in it. Almost without exception, the philosophic and scientific materialists of the past have been extreme pacifists; and the smallest study of the subject is sufficient to show clearly the powerful opposition which has always existed, and still exists, between materialistic beliefs and all forms of militarism or war. I need scarcely remind G.H.C. that in German history, it is the spiritualistic philosophers like Fichte who have most ardently upheld the gospel of militarism: nor need I dilate upon the fact that the present Kaiser unites military and aggressive ideals with a spiritualistic philosophy of the most extravagant and contemptible kind. Those responsible for the present war are as far removed from scientific materialism as they can well be.

Our lower-grade journalists have apparently decided that "materialism" is a suitable brick to throw at anyone who misuses his power, and breaks moral laws. They have ordained that materialism shall be synonymous with selfishness and immorality: and they do so doubtless because they have not the slightest notion what materialism means, or what its doctrines are. Any history of materialism or philosophy (such as that of Lange) would show that materialism has ever been far divorced from crime and physical force. In correcting this misapprehension, permit me once again to thank G.H.C. for the courtesy and insight of his review.

HUGH ELLIOT.

With my co-editors, I willingly afford "a small corner" of the *Irish Naturalist* for Mr. Elliot's courteous protest. The attitude that I intended to attack, by the sentence to which he takes exception, was that of complacency in our modern civilization whose progress, in Mr. Elliot's opinion, has been accompanied by the rise of materialism, as a philosophic system. The war that has burst upon Europe seems to me to demand from us all an abandonment of this complacency, and an acknowledgment

¹ *I. Nat.*, vol. xxii., p. 251.

that, to a great extent, modern nations lack some factor essential to any civilization worthy of the name. The future will show whether a fuller devotion to materialistic philosophy or a return to true (not "extravagant and contemptible") spiritual ideals will put this essential factor within our reach. Our individual convictions with regard to this point must certainly influence our judgment of the motives which rule those German statesmen and soldiers who have desired and brought about the present war. Mr. Elliot denies that these men should be classed as "materialists," because they profess to follow spiritual impulses. On this question I may perhaps quote one whom Mr. Elliot will not presumably class among "lower grade journalists." Professor D. S. Cairns in "An Answer to Bernhardt" (*Papers for War Time*, No. 12, Oxford Univ. Press) writes:—"All the virtues, on this view [that there is no effective authority higher than the State], become simply means to national existence and greatness, to the possession of ice-free harbours and gold-mines, provinces rich in coal and iron, over-sea markets, and so forth. This is plainly materialism of a very elementary kind. The strange thing is that the writer does not seem to see this, and uses idealistic, religious, and even Christian language with the most edifying fervour."

G. H. CARPENTER.

NOTES.

BOTANY.

Botanical Notes from Co. Tyrone.

In my rambles in search of lepidoptera I have noticed the following plants, some of which are uncommon, and others are only recorded from the west end of the county:—*Thalictrum flavum*, in a damp wood off west shore of Lough Neagh, near Arboe. *Aquilegia vulgaris*, on limestone rocks, near the village of Tullyhogue. *Cardamine amara*, very abundant along a small river in Tullylagan Demesne, four miles from Cookstown. *Sisymbrium Alliaria*, on a gravel ridge, near Arboe Rectory. *Epilobium angustifolium*, on rocks in a small stream, half-a-mile south of Lough Fea. *Lobelia Dortmanna*, abundant at the south end of Lough Fea. *Vaccinium Oxycoccus*, in a bog on the west side of Lough Fea, at about 800 feet. **Lysimachia Nummularia*, in a damp meadow in Killymoon Demesne, beside the Ballinderry River. **Mimulus guttatus*, naturalised along the Lissan River, also grows on damp gravel on the edge of carriage drive in Lissan demesne. *Pinguicula lusitanica*, frequent on the bogs around Lough Fea. *Orchis pyramidalis*, on the lawn in front of Killycolp House, near Cookstown. *Scirpus sylvaticus*, on the bank of a mill-race in Tullylagan demesne. *Osmunda regalis*, five clumps of this fern in a wet wood on Lough Neagh. *Equisetum hyemale*, very abundant in Tullylagan demesne on moist banks, and in a wet wood. *Lycopodium clavatum*, growing in the middle of a plantation on red sandy soil, in Lissan demesne, a curious station for this generally mountain plant.

Curylasson, Stewartstown.

THOMAS GREEN.

Icterine Warbler on Migration at Tuskar Light Station.

At 7 o'clock a.m. on September 2nd last, Mr. Glanville, Principal Lightkeeper, picked up a Warbler on the Tuskar Rock. He knew it was strange to him, and he most carefully preserved it in spirit, pending my return from Australia. On examining the specimen I did not find it a difficult matter to make up my mind that it was an Icterine Warbler (*Hypolais icterina*), but to be doubly sure I took it up to Tring Museum and showed it to Dr. Hartert, who very kindly examined it, and confirmed my diagnosis. This interesting species is the first of its kind, that I am aware of, which has been procured from an Irish light-station, and it is the second Irish specimen which has come to hand duly authenticated. Fifty-nine years elapsed between the capture of these two Icterine Warblers. I hope to publish details later on. My cordial thanks are due to Mr. Glanville for sending me this bird.

The University, Sheffield.

C. J. PATTEN.

Decrease of the Squirrel.

The Squirrel, which arrived here for the first time in 1861,¹ and reached its maximum in numbers between 1895 and 1905, is gradually disappearing—notably so within the past two years. This winter I only saw three since September. Mr. C. B. Moffat has also noticed a great decrease in Squirrels at his home in Ballyhyland, Co. Wexford. He writes that on November 4th, 1901, he counted forty in view at once—all on the ground looking for fungi. In 1910, 1911, and 1912 only one was seen by him during three weeks in September, and in 1913 (in October) only a single Squirrel was noticed. At Fassaroe the decline is very marked. On the other hand Squirrels are appearing for the first time in other parts of Ireland, and in some localities have become so plentiful as to constitute a pest—this is the case near Portlaw, Waterford. We can only speculate as to the cause of their increase and disappearance—unfavourable seasons, disease, vermin, inter-breeding, food-supply, more numerous enemies, &c., suggest themselves—but at any rate the phenomenon is remarkable.

The Vole plague in S.W. Scotland caused great alarm some years ago, but the little animals decreased as fast as they increased—and other instances of a similar kind in the vegetable as well as the animal kingdom can be mentioned. I can readily recall the dismay with which canal companies regarded the rapid spread of *Elodea canadensis* in their waterways. Its decrease surprised everyone by its rapidity. Nature often heals herself more effectually than the most drastic human remedies.

Fassaroe, Bray.

RICHD. M. BARRINGTON.

¹ See paper, by the writer, on "The introduction of the Squirrel into Ireland." *Proc. Roy. Dub. Soc.*, 1880.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

JANUARY 16.—The President and Council entertained W. S. GREEN, C.B., to breakfast in the Haughton House on the occasion of his retirement from the Chief Inspectorship of Irish Fisheries. A party of fifty guests were invited to meet Mr. Green, including his principal official colleagues and a representative gathering of naturalists—both professional and amateur. SIR CHARLES BALL (President) gave an interesting account of Mr. Green's career from his youthful dredging expeditions in southern Irish waters to his invaluable administrative work in improving the output and quality of the fish-harvest along the west coast, pointing out that several valuable export trades of cured fish to North America and Russia had been established by Mr. Green's exertions. His achievement, as a geographer and climber in the Canadian Rockies and the New Zealand Alps were also eulogised. Mr. Green replied in a characteristically modest and humorous speech.

Recent gifts include a Rabbit from Miss E. Maguire, a pair of Pheasants from Sir John Ross of Bladensburg, a Common Quail from Professor C. J. Patten, and a piebald variety of the Common Eel from Sir Anthony Weldon.

DUBLIN NATURALISTS' FIELD CLUB.

SEPTEMBER 12.—EXCURSION TO GORMANSTOWN AND LAYTOWN.—Owing to unfavourable weather in the morning, only seven members attended this excursion, which left Amiens Street at 2 o'clock. The day proved quite a fine one along the sea-shore, and the party, leaving the train at Gormanstown, walked by the sea to Laytown, the geological features and glacial deposits being pointed out by the conductor, J. de W. Hinch. The raised beach north of Benhead attracted particular interest. This part of the coast was marked by an absence of sand-loving plants, being all within the tide-marks.

OCTOBER 3.—EXCURSION TO LUCAN AND LEIXLIP.—About twenty members turned up at Parkgate Street for this excursion, which was conducted by Miss Knowles, and proved very successful. Flowering plants, fungi, and sponges were the subjects on which attention was specially concentrated, Miss Stephens taking charge of the last-named department. The occasion was particularly favourable for studying and comparing the three Irish figworts, which grow in convenient proximity by the river in Lucan demesne. Of the three, *Scrophularia nodosa* was the only one not still in flower. Most of the other distinctive plants of the locality were recognised, though the majority were past flowering. The marsh marigold (*Caltha palustris*) was gathered in autumn blossom near the Salmon Leap. The search for freshwater sponges proved successful, and Miss Stephens identified (and afterwards exhibited at the Convezazione) the species *Ephydatia fluviatilis*, which appeared to be abundant.

NOVEMBER 7.—EXCURSION TO HOWTH.—Twelve members and friends took part in this excursion, which concluded the year's outdoor programme.

The southern side of the peninsula and the demesne were visited and explored for higher plants and fungi, and demonstrations of the geological features were given by J. de W. Hinch who with the President, conducted this excursion. Among the plants found in late flower the Goat's beard (*Tragopogon pratensis*) aroused some interest, as being fully expanded at the unusual hour and date of 2 p.m. on November 7. The fact that some Frogs were also seen was a tribute to the mildness of the air.

NOVEMBER 10.—CONVERSAZIONE.—The winter session of 1914-5 was inaugurated with a conversazione in the Royal Irish Academy House, at which the Vice-President (Professor Carpenter) presided, and a short address, illustrated with numerous lantern slides, was given by the President, N. COLGAN, M.R.I.A., on "Scrambles after Alpine Plants." The attendance numbered about eighty, and great interest was shown both in the lecture and in the large number of exhibits which were on view in the Library.

DUBLIN MICROSCOPICAL CLUB.

JANUARY 13.—The Club met at Leinster House, D. M'ARDLE (President), in the chair.

Dr. G. H. PETHYBRIDGE exhibited a series of microscopical preparations illustrating the life history of the fungus *Hypomyces Solani* R. & B., as determined from the study of its behaviour in pure cultures, some of which were also exhibited. The perithecial or ascospore-stage of the fungus was first described in 1879 by Reinke and Berthold, who believed that its conidial stage was *Fusisporium* (*Fusarium*) *Solani*. It occurs not infrequently upon decayed potato tubers, but it is a saprophytic concomitant of decay, and not an actual parasite upon the potato. Pure cultures were obtained from material supplied by W. F. Gunn in August, 1913, and exhibited by him at the Club meeting on March 11th, 1914 (see *Irish Naturalist*, vol. xxiii., 1914, p. 121) the starting points being single ascospores. From these, growths were obtained on various media which produced *Fusarium*-like conidia as well as chlamydospores. Careful study of these conidia and spores and comparison with those of certain species of *Fusarium*, also grown in pure culture, show, however, that they differ from the latter, and the conclusion is arrived at that *Hypomyces Solani* is not the perithecial stage of a true *Fusarium*. After having been grown in pure culture for about twelve months success was obtained in inducing the development of perithecia, this being the first time that this has been done with this species. Several cultures in which these perithecia were present were exhibited.

J. N. HALBERT exhibited a specimen of the ants' nest mite *Discopoma pulcherrima*, Berlese, found last September in company with the black ant *Formica fusca* in a decayed birch trunk at Glendalough, Co. Wicklow. This handsomely sculptured species has not been previously recorded from the British Isles. It was originally described by Dr. Berlese, from Italian specimens which were found in rotten wood, and also in ants' nests, though in this case the species of ant with which it was found has not been recorded.

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CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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ON THE IRISH NAMES OF MAMMALS.

BY R. F. SCHARFF, B.SC., PH.D.

MY knowledge of the Irish language being, unfortunately, very scanty, I have endeavoured to collect information from various sources on the names of the animals found in Ireland. The list of names is already quite a large one, though it is possible that many of the words I possess are obsolete or altogether wrong. I consider it best to issue the list in instalments, and I venture on this occasion to limit my remarks to the group of beasts or "mammals" as they are called by zoologists.

Professor MacNeill kindly supplied me with a list of the names that he knew, while Mr. Colgan gave me a series of words collected in the West of Ireland. Mr. R. I. Best pointed out several errors in my manuscript, and indicated sources of information which were unknown to me. I am also obliged to Mr. L. G. Gogan for valuable suggestions. I am greatly indebted to these friends, and I hope to receive still more help, and especially criticisms, from others interested in obtaining the correct names of all the animals inhabiting Ireland. The few remarks I am now offering on the Irish names of Mammals are not intended to supply a complete list. Much more research and discussion is required before such a list can be accepted as anything like final. I bring the subject, therefore, under the notice of readers of the *Irish Naturalist* with a view to opening up a field of linguistic study in connection with Irish natural history.

The Irish names of many of the Mammals are, of course, well-known, but in certain cases I think they have been misapplied. New names will have to be supplied or created for several species which do not possess an Irish name. A large number of so-called English names of animals have only been invented by naturalists within recent years. It is doubtful also whether people readily discriminated in bygone ages between nearly related species which are not easily distinguishable, such as the House Mouse and Field Mouse, the Common Seal and Grey Seal, the various kinds

of bats and others. Several Irish words clearly referable to Mammals have not as yet been identified, that is to say, we do not know what kind of animal they were applied to. This is the case especially among older words which are now obsolete. The peculiar interest in those words lies in the fact that certain animals have probably vanished from Ireland within historic times. If their Irish names could be ascertained the approximate period of their extinction might thus be traced.

Mr. Alston's list of Scotch-Gaelic words contains many supposed Irish names which I cannot find elsewhere, and some of these may possibly have quite another meaning than that indicated.

LIST OF NAMES.

(The numbers in brackets refer to the Bibliography, p. 53).

BADGER.

brioc.

BAT.

ialltoḡ (2), míoitcḡ leatair (2), oialltoḡ (6), ialltoḡ leatair (7), liobḡ leatair (3), eatleog (6), reiatán leatair (1), callac (1), fearcar luč (1), leróbin leatair (1).

The fact that so many different names should have been given to this animal, suggests almost that different kinds of bat had been noticed by the Irish and named by them. No less than seven kinds of bat inhabit Ireland, but some of these are very critical species and not readily recognised. Most if not all the English names of these species are of quite modern origin, such as Hairy-armed Bat and Leisler's Bat, and very few zoologists are able to distinguish the various species except after close scrutiny.

BEAR.

maḡamain (2), beitir (2), art (12), béar (7) Young Bear, uirḡ (6).

Although we know from the large quantity of bear remains found in Ireland that bears must have been very abundant in this country in the past, they had evidently been exterminated before the 9th century A.D., as St. Donatus clearly states that bears did not exist in Ireland about the year 800.

BOAR (WILD).

τοῖς (2), πιακὰς cattle (6), πιαῖουλλὰς (6), πιαῖμυς (6)
 μυς αἰτα (7), τιματ (1), (older word).

Wild swine abounded in the forests of Ireland when Giraldus Cambrensis visited this country in the 12th century. At what period they became extinct is not known, although it has been asserted that they were common until the 17th century.

DEER.

πιαῖ (2), πιαῖ πιαῖ (5), or, ρεῖ (1), (the last two are older words).

We possess trustworthy evidence of the former presence in Ireland of three distinct kinds of deer, viz., the Giant Deer or so-called Irish Elk, the Reindeer, and the Red Deer. It is quite certain that the first two species became extinct in Ireland long ago, while the third still lingers in a protected state in the south-west. The Giant Deer has vanished altogether, the Reindeer has retreated northward. It may be argued therefore that the first is the oldest and the Reindeer the second oldest of the Irish deer. Nevertheless all the three species may possibly have still lived together in Ireland in early Christian times.

Several Irish names of Mammals have not yet been identified. Among them may be words signifying Giant Deer and Reindeer, and we may thus arrive at some more definite conclusion as to the period during which these animals died out in Ireland. O'Reilly translates βοῦρρε by the word "Elk" or "Buffalo." The Elk is a North European deer which once lived in Scotland, though there is no clear evidence that it ever spread to Ireland. The same author gives us for ρεῖ "Moose Deer," which never

inhabited Europe. It is quite possible then that either or both these words were applied to the "Irish Elk." Mr. Gogan suggested to me that the word *cearú* might have been used for that species. I cannot find the word in my Irish Dictionary, but I presume it corresponds to the Scotch-Gaelic "carr" or "cer" which has been rendered by "Stag."

The words "brac" and "fast" are the Scotch-Gaelic, according to Forbes, for Reindeer.

In Alston's list two Irish words are given for Roebuck, viz., *feapbóg* and *poc muar*. But this deer never was a native of Ireland, and O'Reilly translates the former by Hare or Red Deer, while he states "Roebuck" is *feapboc* in Irish. The words *fiar muar* and *fiar pionn* are rendered by Fallow Deer in Alston's list. This again is probably a mistake, for this deer only lives in our large parks in a semi-domesticated state and has never inhabited Ireland as a wild species.

Stag—*dam allar* (2). Doe or Hind—*eilir* (6), *boirceall* (6), *as* (1), *aitir* (12). Fawn—*manas* (6), *iarndeo* (6).

DOG.

maoar, *maoriar* (a house dog, mongrel, &c. (2) or mastiff (13)), *mauiris* (6), *coirpearian* (6), *orc* (6) (a small hound) has also been applied to a whale, a pig, a hen's egg and a salmon. *mearcu* (lap-dog (13)), *miotcu* (greyhound (6)), *cú*, *saorai* (hound (2)).

The word *cú* means greyhound according to Kuno Meyer and I feel sure that he had the great Wolf-hound in his mind and not the modern slim Egyptian Dog that goes by this name. On the authority of Father Hogan *cú* was applied to the large hound that hunts game by sight. He tells us that the word *saorai* designated a hound which relies more on scent in hunting. Now it is of interest to note that the evidence derived from fossil remains indicates the former presence in Ireland of three types of dogs. They were found in crannogs and peat deposits. One of these resembled the modern Wolf-hound in shape and that would

have been the cú of ancient Ireland. The second was something like a shepherd's dog. It was evidently called "ḡadair," while the third or "madad" was of the type of the modern Irish Terrier.

FOX.

fiannač (2), madad fuad (2), bannač (6), cliabac (6), ciumhach (6), fáinche (6), fuince (6), iommuinn (6), iódmuin (6), loirib (1), (older word).

In several modern European languages there are numerous names for the Fox, and it need not surprise us therefore that there are so many in Irish. Some of the above, however, may be wrongly identified. Thus Meyer translates cliabac by "Deer."

GOAT.

ḡadair. Wild Goat—ḡadair fuadain (7). Kid—mionnán (6).

HEDGEHOG.

ḡráineos (7), ḡruin, ruca (1) (the last two are older terms.)

HARE.

ḡirrfiad (2), ḡearrfiad (6), miol maiḡe (7), rcibeirneos (6), paca (6), pacán (6), fiad miol (1), fiadmuin (6), (the last four are older words). Leveret, breos (6).

HORSE.

capall, eac (2), marc (2), márcan (6) (the last two probably older terms). Stallion—rcail (7), ḡraighne (6), ḡrairne (8), ḡraighac (6). Colt—bromac (6), iomac (6). Mare—lair (7).

MARTEN (Marten "Cat").

catcrainn (1), madra crainn (7).

I have been informed by Professor MacNeill that he is doubtful whether the words toḡan, toḡmann and crainnéú should be applied to this animal. The first term is certainly the Scotch-Gaelic for Marten and it may therefore have been used in Ireland. The word crainnéú has been translated as "lap-dog" by O'Reilly, but Kuno Meyer is not in agreement with this interpretation. The Polecat never inhabited Ireland.

MOUSE.

House Mouse—*tué* (10), *tué beas* (3), *muir* (14).

Field Mouse—*tué péir* (10).

There are two different kinds of true mice in Ireland, viz., the House Mouse and Field Mouse. The Shrew Mouse is really not a mouse in a zoological sense, being more nearly related to the Mole and Hedgehog. The small English Harvest Mouse and the Dormouse are not found in Ireland. The word *tué* is also applied to the rat, and it would, perhaps, be better, as has been done by some authorities, to call the latter *tué móir*.

OTTER.

maora uirge (2), *maoraó doinn* (10), *cú tobrián* (12), *cú roborne* (12), *toobarú* (2), *conpoirne* (6), *coibreadan toobar* (6), (the last three are older words).

OX.

uam (7), *marc* (2). Wild Ox.—*uam alitad* (6). Bull.—*carb* (6), *uam uarraig* (7). Cow.—*bó*. (There are a great many other words for cows in milk or dry, for horned and hornless ones, &c.) Calf.—*bóban*, *bóinín* (12).

PIG.

muc. (There are many other words for pig according to condition, sex, and age).

opc (6) (older word). This word has also been translated according to O'Reilly by "small hound" and many other designations. (See Wild Boar).

PORPOISE.

muc mara (3), *muc bioirac* (6).

No special names for the various kinds of marine mammals allied to the Porpoise (such as the Dolphins, &c.) seem to exist in Irish.

RABBIT.

coibreadan muir (6), *coinn*.

The last word is a borrowed one according to Best, and yet it is used in the ancient Irish poem quoted by Wilde (5). Barrett-Hamilton believed the Rabbit to have been intro-

duced into the British islands by the Normans, although he acknowledges that it must have existed in England long before that, and supposes that subsequently it was destroyed during the Ice Age.

RAT.

tué, tué móp, tué fpanncac (or simply) fpanncac (2).

Two different kinds of rats have been observed in Ireland. One of them being characterised by its long tail and black colour. If the last two Irish names were applied to these two species, it would be best to restrict tué móp to the Black Rat and fpanncac to the Brown Rat.

SEAL.

ron (6).

There are no distinct words for the two common seals which frequent the Irish coast. In Scotch-Gaelic the large Grey Seal is known by the name of "tap-bheist," while the other has the same name as in Irish "ron."

SHEEP.

caora (2), caera (12), oi (older terms) (2). Ram.—peite (6). peitin (6). Wether.—motc (7), motcacán (7).

Many other words descriptive of sheep at different ages and conditions exist.

SHREW MOUSE.

uallós (1), uallós-an-fhaoicé (6), cnaólué (1), gar tué (1), mallán (1).

Almost all these words are identified with the Mole by both O'Reilly and Alston, but as this animal never inhabited Ireland it is unlikely that there should be so many Irish names for it. Moreover the Scotch-Gaelic for Shrew Mouse is "dallag." It seems to me therefore that all the names referred to should be identified with this species. The word tué féir which Father Dinneen translates by Shrew Mouse is evidently the Field Mouse. O'Reilly mentions still another word uallós feoir as equivalent to Mole and Dormouse. As already mentioned the latter is not an Irish species.

SQUIRREL.

iora ruad (3), reoróg (6), ora (10), iora (6).

The word *eoróg* often applied to the squirrel is obviously wrong. (See Stoat).

The question whether the Squirrel is a true native of Ireland has often been debated, and Barrington has written a valuable paper¹ in which he maintains that this species was only introduced into this country at the beginning of the last century. On the other hand we have O'Flaherty's authority for the existence of the Squirrel in Connaught in the 15th century, and in view of the fact that there are two good Irish names for this mammal, it seems to me more probable that it is indigenous. At the time when the forests were so extensively cut down it would have become very local and may only have spread again when the introduction referred to infused new life and vigour into the old stock.

IRISH STOAT (so-called "Weasel").

eoróg, *ear* (2), *near* (1), *bláchnaí* (12), *iaróg* (6).

The Irish Stoat is quite peculiar to Ireland. It somewhat resembles the English Stoat but is smaller and different in other respects. It is often called "weasel" in Ireland. The true Weasel is not an Irish species and a much smaller animal than the Irish Stoat which might be called "assogue."

WALRUS.

capall mara (1), *capall fairrge* (1), *capall nime* (1), *rozuat* (fide Best from the old Norse "rosualt").

I am in doubt whether Alston is correct in identifying these names with the Walrus, as there is no evidence of the occurrence of this animal off the Irish coast. It is possible, however, that this great marine carnivore frequented the Irish seas in former times, as it is still occasionally met with off the coast of Scotland.

WEASEL (see Stoat).

¹ *Proc. R. Dublin Soc.*, 1880.

WHALE.

míol móir (2), pálain (6), bleo (12), bloac (12), páin, māsair (1) (older words).

There are several kinds of whales, as well as dolphins in Irish waters (see Porpoise), and these are, as far as I know, not discriminated from one another in Irish.

WOLF.

maorao allair (2), faelcú (11), mactipe (6), cman (12), brec (12), maora allta (7), ríbeac (6), fael, cú allair (2) (older terms).

It is astonishing that such a number of words should exist for Wolf, but if, as I suggested, the term maorao was exclusively applied to the small watch-dog, two of the words given might be eliminated as incorrect. The only other somewhat wolf-like creature that inhabited Ireland formerly was the Hyaena. It became extinct probably long before the Reindeer and Irish Elk, and it is unlikely that an Irish word for this animal should exist.

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SOME MARINE ALGAE OF COUNTY CORK.

BY BLANCHE E. DUKE, B.SC., A.R.C.SC.I.

The Marine Algae which I propose to deal with are the rarer Irish species in the Herbarium of University College, Cork.

Between the years 1878 and 1911 there were no additions to the collection, but recently some rather interesting species have been added from Courtmacsherry Bay and Cork Harbour. Of these, two of the most noteworthy are *Callithamnion arbuscula* and *Ptilota plumosa*.

"*Callithamnion arbuscula* is a boreal alga. It is found in Norway, the Faeroes, Scotland, and Ireland, and is abundant in the Clare Island district, forming a band on rather steep exposed rocks. In the much colder waters of the North Sea it does not occur south of Yorkshire, and on our west coast it was known to descend to Ayrshire and Isle of Man. *Ptilota plumosa* is also a northern species. Found in Iceland, Nova Zembla, and Spitzbergen, it descends as far as Yorkshire on our east coast, and had been recorded from North Wales and the Isle of Man on the west. On Clare Island it is plentiful, being attached to the stipes of *Laminaria Cloustoni* and washed ashore in company with such southern plants as *Taonia* and *Callymenia reniformis*." "Both are supposed to occur in the South of Ireland, but this requires confirmation."

The quotations are taken from Mr. A. D. Cotton's paper on "The Distribution of certain British Algae," *Journ. Bot.*, Feb., 1914. At that time he had not been able to see any specimens and some so labelled were wrongly named. The statement that they do occur can no longer be doubted, both having been collected by me in Courtmacsherry Bay last August.

This bay is very much sheltered on the western side, but on the eastern side, from Garrettstown to the Old Head of Kinsale, is decidedly exposed. It was at the very extremity of the "Old Head," near the lighthouse that *Callithamnion arbuscula* was found. Here the cliffs are very precipitous,

and *C. arbuscula* is fairly abundant on the perpendicular and horizontal faces of the rocks a little below high-water mark; a band of *Porphyra vulgaris* occurs just above it.

Ptilota plumosa was for several days hunted for in vain, but finally turned up after a storm, having been washed ashore on the stipes of *Laminaria Cloustoni*. There must be a fairly abundant growth of it in the deep waters of Courtmacsherry Bay; the coast-line extending for about two miles westwards from Garrettstown was examined, and *P. plumosa* and its host were found in several places as well as on Garrettstown Strand.

With regard to Cork Harbour, practically all the recent collecting has been done on the western side. At Spike Island, just within the mouth of the harbour *Nitophyllum Hilliae* has been found. Myrtleville, which is outside the mouth of the harbour has provided several interesting species, e.g., *Antithamnion crispum*, *Gloiosiphonia capillaris*, and *Nitophyllum Bonnemaisoni*.

The list of the rarer Irish species with the names of the localities, dates when collected, and names of collectors is given below. The system of classification adopted is that used in Rabenhorst's "Kryptogamenflora" by Dr. Ferdinand Hauck.

I am much indebted to Mr. A. D. Cotton, Royal Gardens, Kew, for verifying and naming certain critical specimens.

RHODOPHYCEAE.

Monospora pedicellata Ag.—Cork Harbour, Dr. J. R. Harvey.

Seinaia furecellata Bivona.—(1.) Cork Harbour, 1836, Dr. J. R. Harvey.
(2.) Ballycotton, July, 1836, Miss Ball.

Antithamnion crispum Thur.—Myrtleville, August, 1911, Major H. A. Cummins.

Callithamnion arbuseula Lyngb.—Old Head of Kinsale, August, 1914, B. E. Duke.

Callithamnion cruciatum Ag.—Cork Harbour, Dr. J. R. Harvey.

Callithamnion plumula Ellis.—Corkbeg, August, 1837, Dr. J. R. Harvey.

Callithamnion tetragonum Ag.—(1.) Bantry Bay, October, 1850, Isaac Carroll. (2.) Courtmacsherry Bay, August, 1914, B. E. Duke.

Callithamnion spongiosum Harv.—Bantry Bay, July, 1878, I. Carroll.

Callithamnion scopulorum J. Ag.—Ringabella Bay, March, 1914, B. E. Duke.

- Ptilota plumosa* L.—Courtmacsherry Bay, August, 1914, B. E. Duke.
Gloiosiphonia capillaris Carm.—Myrtleville, August, 1911, B. E. Duke.
Ceramium flabelligerum J. Ag.—(1.) W. of Cork Harbour, 1850, I. Carroll.
 (2.) Myrtleville, August, 1911, B. E. Duke.
Ceramium eehionotum J. Ag.—Cork Harbour, September, 1851, I. Carroll.
Ceramium Deslongchampsii Chauv.—(1.) Cork Harbour, 1851, I. Carroll.
 (2.) Bantry Bay, July, 1878, I. Carroll.
Halarachnion ligulatum Kütz.—(1.) Whitepoint, 1836, Dr. W. H. Harvey.
 (2.) Courtmacsherry Bay, August, 1914, B. E. Duke.
Gigartina acicularis Lamour.—Rocks outside Cork Harbour, 1851, I. Carroll.
Rhodymenia Palmetta Grev.—(1.) Youghal, Miss Ball. (2.) Myrtleville, August, 1911, H. A. Cummins.
Nitophyllum Gmelini Grev.—Cork Harbour, July, 1836, Dr. J. R. Harvey.
Nitophyllum Hilliae Grev.—(1.) Cork Harbour, July, 1914, B. E. Duke.
 (2.) Old Head of Kinsale, August, 1914, B. E. Duke.
Nitophyllum Bonnemaisoni Grev.—Myrtleville, August, 1911, H. A. Cummins.
Stenogramme interrupta Harv.—Near Spike Island, 1836, Dr. J. R. Harvey.
Gelidium pulchellum Kütz.—Myrtleville, July, 1912, B. E. Duke.
Chondria dasyphylla Ag.—(1.) Myrtleville, August, 1911, B. E. Duke.
 (2.) Kinsale, April, 1912, B. E. Duke.
Pterosiphonia parasitica Schm.—Myrtleville, August, 1911, B. E. Duke.

PHAEOPHYCEAE.

- Cystoseira fibrosa* Huds.—Bantry Bay, July, 1878, I. Carroll.
Cystoseira granulata L.—(1.) Cork Harbour, 1836, Dr. J. R. Harvey.
 (2.) Myrtleville, August, 1911, H. A. Cummins.
Taonia atomaria G. et W.—Ballycotton, 1835, Miss Ball.
Striaria attenuata Grev.—Cork Harbour, 1836, Dr. J. R. Harvey.
Arthrocladia villosa Duby.—(1.) Cork Harbour, Dr. J. R. Harvey.
 (2.) Cork Harbour, July, 1914, B. E. Duke.
Sporochnus pedunculatus Huds.—Cork Harbour, July, 1850, J. Wright.
Cutleria multifida Grev.—Ballycotton, August, 1835, and July, 1836, Miss Ball.

CHLOROPHYCEAE.

- Cladophora macallana* Harv.—W. of Cork Harbour, 1850, I. Carroll.
Cladophora diffusa Roth.—Youghal, October, 1836, Miss Ball.
Cladophora gracilis Griff.—Youghal, 1836, Miss Ball.
Cladophora pellucida Huds.—Bantry, November, 1907, Miss Hutchins.

REVIEWS.

THE WEXFORD GRAVELS.

The Wexford Gravels and their bearing on Inter-glacial Geology. By GRENVILLE A. J. COLE, M.R.I.A., F.G.S., and T. HALLISSY, M.R.I.A., Geological Survey of Ireland. [Extracted from the *Geological Magazine* (Decade VI.), Vol. I., n. 605, pp. 498-509, November, 1914.]

The Wexford Gravels have been the subject of considerable controversy, much of which appears to have arisen from the efforts made by geologists to fit in the facts of the Wexford area with theories advanced to explain the geology of other parts of the British Isles. Regarding the disputed succession of the deposits in the field, the views put forward by the authors may be accepted as final—that the widely spread and highly calcareous “Marl” is the moraine profonde of the Irish Sea glacier, and the “Wexford Gravels” which occur sporadically in the district are derived from this underlying Boulder-clay. These gravels in addition to the northern erratics and shells usually found in east coast Glacial deposits contain considerable quantities of chalk-flints, lignite, Pliocene mollusca, &c., apparently derived from the submarine Cretaceous and Tertiary outliers off the eastern and southern coasts. The main purpose of the paper is, however, the bearing on interglacial geology of the Wexford Gravels, and here the authors are on much more debatable ground. It must be admitted that until late in the last century interglacial periods were used in a very casual way by many geologists, the undoubted interglacial deposits in alpine lands, and an assumed extensive submergence in the British Isles giving much support to the theory. Active scepticism regarding interglacial land-deposits on the one hand, and the disappearance of the submergence theory on the other has in recent years reduced interglacial periods to a rather precarious position—that is in the older sense of an introduction of a fairly complete flora and fauna to these islands during the period. The work of our authors on the Wexford deposits, valuable on so many other points, cannot be said seriously to modify the normal succession of Glacial deposits. The advance of an ice-sheet laying down Boulder-clay—the denudation of this Boulder-clay resulting in the formation of gravels in favourable localities—and the re-advance of ice, usually local ice, depositing a loose stony loam, is a succession very commonly found in Ireland, and this succession may be applied to the Wexford deposits without straining the facts unduly. It may be that our authors regard the lapse of time between the retreat of the Irish Sea ice and the advance of the local ice as an interglacial period. If this is their idea of an interglacial period they may certainly be considered to have made a good case, but in view of the meaning usually attached to the term, recession and re-advance of the ice would appear much safer expressions.

J. DE W. H.

AN ATTEMPT AT PLANT ECOLOGY.

Practical Field Botany. By A. R. HORWOOD, F.L.S. London: C. Griffin, & Co., 1914. Pp. xvi. + 193. Illustrated with 20 plates and 26 figures in the text. Price 5s. net.

The title of this book does not form a very accurate clue to its contents, and anyone expecting to find it of value for actual field use will probably be much disappointed.

The book opens with a preface in which it is stated that the information in it has been gathered from many quarters including "the Museums Association or Museums Journal, the Annual Reports of Museums," etc. Had it been obtained as a result of the first-hand study of vegetation in the field possibly the result might have been more stimulating.

Five chapters, an appendix and a bibliography follow. In the appendix, amongst other things, instructions will be found for modelling flowers in wax and for preserving plants in their natural colours.

The opening chapter deals with "the scope, object and aims of botany, with general notes on the subject and how, when and where to study plants on the new lines." The new lines, it should be explained are ecological. The following chapter discusses "the special methods used in collecting, preserving, mounting and storing plants for herbaria" and, as may be supposed, is not very redolent of the field!

The third chapter consists of a disquisition on "the necessity for encouraging the study of botany on ecological lines, by the popularisation of pure life-histories of plants through nature study, museums, scientific societies, and other associations, and in the university." We confess our ignorance as to what is intended to be conveyed by the expression "pure life-histories." Have we thus far been guilty of studying such life-histories in an impure or adulterated form? The fourth chapter contains "general outlines of the subject to be treated, as part of the life-history of a plant: an attempt to remodel the process of treating the description of plant forms."

At long last in chapter 5, which is entitled "an outline of the plant formations that can be studied upon a broad and convenient basis," we reach that portion of the book which should carry us to plants in the field. This, however, consists mainly in an enumeration of the principle types of plant habitats with copious lists of the names of the species of plants likely to be found in them. It is to be feared that these bare lists (sometimes giving the common at others the scientific names minus their authors) are scarcely calculated to attract the beginner. Real ecological treatment of the subject matter is wanting, but a word of praise should be extended to most of Mr. Horn's photographs of types of vegetation, reproductions of which serve as illustrations of this chapter.

G. H. P.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Bonnet Monkey from Mr. Bryan, a White-nosed Monkey from Dr. Coady, and a Jerboa from Mr. E. Touche, and a large assignment of Salmon and Trout eggs from the Irish Fisheries Office. Several Dingo pups have been recently born in the Gardens, as well as four Lion cubs—three males and a female—the parents being "Red Hugh" and "Nigeria."

JANUARY 27.—ANNUAL MEETING held at Leinster House (by kind permission of the Council of the Royal Dublin Society), Sir CHARLES BALL, Bart., M.D., in the chair. The Hon. Secretary (Prof. G. H. CARPENTER) moved the adoption of the Council's Report for 1914.

The sudden outbreak of the Great War in August was a heavy strain on the Society's resources, and brought about a great reduction in the number of visitors to the Gardens, so that there was a decrease of £287 in the gate receipts as compared with 1913, a year much below the average. Forty new members (including twelve life-members) were admitted during 1914.

The year 1914 has been perhaps the most noteworthy in the whole history of the Society as regards the large Apes. The Orang-utan, "Sandy," procured in 1913, has remained in good health throughout the year. In October, 1914, a handsome male Hoolock Gibbon was offered for purchase at a low price; the animal had been a pet among the officers of a battalion of the Gordon Highlanders ordered to the Continent. As the state of the Society's funds made purchase in the ordinary way impossible, some members of the Council raised the necessary money and presented the Gibbon to the collection. Of the Chimpanzees in the Ape house at the beginning of the year the young female and the Hon. Walter Rothschild's great male "Tom" have, unfortunately, died. The other male, "George," is, however, still in splendid health, and deserves mention as one of the most amusing and friendly Apes ever kept in Dublin. In September a pair of large Chimpanzees were obtained from London in exchange for two lion-cubs; the male appeared to belong to the rare "Bald" species (*Anthropopithecus calvus*), not to the common kind (*A. troglodytes*) usually imported from West Africa. Unfortunately, these specimens survived only a few weeks. A small, rather delicate, female Chimpanzee was placed on deposit in the summer, and, though at first sickly, became much stronger after a month's careful tendance in the Iveagh Hospital. In January, 1914, a small male Chimpanzee was purchased, and is still alive and healthy. The Council decided to acquire this animal, because it had been imported from West Africa in company with a female Gorilla, which was offered along with it. Never before has a Gorilla been kept alive in either the Dublin or London Gardens for more than a few weeks; the Council is, therefore, much gratified that under the care of the Superintendent and the Keeper, J. Supple, "Empress" has remained in splendid health throughout the year. Probably the companionship of the Chimpanzee has been of great benefit

to the Gorilla, as solitary specimens of the latter in captivity usually become morose, and rapidly lose condition. The two are, on the whole, good friends, but they occasionally indulge in boxing and wrestling bouts, to which the Gorilla often challenges her companion by drumming with her hands on her chest.

So far as can be ascertained, the four types of Anthropoid—Gorilla, Chimpanzee, Orang-utan, and Gibbon—have never been all exhibited together previously in any Zoological Gardens. The present assemblage in our Ape-house constitutes, therefore, a "record" of which the Society may be proud.

Early in the year the opportunity of purchasing three rather scarce African Monkeys—the Moustache, Red-eared, and White-nosed—was seized; these specimens are still in good health. A baby Rhesus Monkey was born in the open-air cage, but it only lived for two days. Among the American species the last of the Spider Monkeys has died, but four distinct Capuchins are now in the house. Older specimens of the White-fronted Capuchin which died during the year were found to have suffered from osteo-malacia; they afforded Prof. J. A. Scott with material for the elucidation of this obscure disease, on which he contributed a paper to the Dublin Biological Club. The Aye-aye and Slow Loris that were in the Monkey-House a year ago have both, unfortunately, died, but another interesting Lemuroid has been received in a Garnett's Galago, kindly given by Dr. A. Merrin.

The year just past has been signalized by the death of the two oldest Lions, "Romulus" and "Pluto," both born in the old Lion-House seventeen years ago. Five cubs have been born during the year, all of them males—a remarkable and unusual preponderance of one sex. The first family of two—born on May 22nd—were from "Conn" and "Mitze"; the second family of three—on July 11th—were the firstborn of the Dublin-bred Lioness, "Fiona," "Red Hugh" being the father. The pair of "Conn"—"Mitze" cubs born in August, 1913, were exchanged for the Chimpanzees mentioned above; a pair from the "Red Hugh"—"Nigeria" family of December, 1913, were also disposed of during the year. The stock of Lions now stands at twenty-two—thirteen males and nine females.

The collection of large carnivores now includes five Tigers, the three adult specimens for many years in Dublin, being supplemented by two healthy cubs, which at the time of their arrival, in July, were about six months old. These young Tigers are a gift from Col. Combes, Principal Medical Officer for the Cochin States, S. India; the Council feel deeply grateful to Col. Combes for such a valuable gift.

The stock of Bears has been depleted by the death of both the American Black specimens which were in the Gardens a year ago. An interesting animal has, however, come to us in one of the White-eared race of the Brown Bear (*Ursus arctos leuconyx*) from Chinese Turkestan, a generous gift from Capt. Bury. One of the most serious losses in the Society's stock is due to the unfortunate death of both the Sea Lions; the animals were apparently in excellent health until a few days before they succumbed to acute gastric trouble. The larger specimen may have sustained

some internal injury when, one night in October, it broke through the partition between its own pond and the Beavers' enclosure, climbed over the three-foot railing around the latter, and disported itself for some hours in the lake, where it caught and partly devoured a large Pike.

An especially noteworthy addition to the collection of Rodents is a male Ingraham's Hutia (*Capromys Ingrahami*) from the Bahamas, kindly given by Dr. Edwin Bate. The Hutias are shy, tree-haunting beasts, very rarely seen in menageries; found only in the West Indies, their nearest relations are the well-known South American Coypus, of which an example may always be seen in the Gardens.

By the death of the Anoa—the peculiar Celebean Antelope—the collection has lost one of its most interesting bovines. In the autumn the Duke of Bedford generously offered to the Society a pair of Elands and a Gnu from his famous collection at Woburn. The Council has gratefully accepted this gift, but, owing to two outbreaks of cattle disease in the English Midlands, it has not yet been possible to arrange for the shipment of the animals to Ireland; it is hoped that they will be imported early in the new year.

The large and attractive collection of Birds has been well maintained, noteworthy additions being a pair of Scarlet Ibis given by Mr. J. Nugent Lentaigne, and a Sandgrouse given by Mr. H. B. Rathborne. Among the Reptiles the death of one New Zealand Tuatera leaves only a single survivor of that highly interesting ancient type in the Gardens.

It is gratifying to record a second season's successful work at the Fish Hatchery. From the Irish Fisheries Office 10,000 Brown Trout and 60,000 Salmon eggs were received in January; these were supplemented by a generous gift of 20,000 Brown Trout eggs from Col. Claude Cane. At the end of the hatching season 45,000 Salmon and 22,000 Trout fry were handed over to the Riparian Owners of the Liffey. Later in the year some of the Hatchery boxes were used for rearing larval Axolotls.

Except a few necessary repairs no construction-work has been undertaken during the year beyond the provision of a range of open-air cages to the Monkey-House and the re-modelling of the adjacent indoor cages, as described in the last Report. The work has been satisfactorily carried out, and a number of the smaller carnivores—Civets, Genets, Racoons, &c.—are now well housed in the outside cages. The opportunity has been taken to improve greatly the access to the Anthropoid cages by providing a passage-room on the west side in addition to the Keeper's room on the east side already provided.

From several admirable sets of photographs received for the yearly competition in animal portraiture the Council had no hesitation in selecting for the award of the Silver Medal the work of Mr. J. Manby, of Dublin. The sets submitted by Mr. S. Sarne, of London, and Mr. A. MacCallum, of Dublin, were also very good, so that special Bronze Medals were awarded to them.

The subjects chosen by Mr. Manby are the four types of Anthropoid now on view in the Monkey-House. His beautiful pictures will serve, therefore, as a permanent record of a noteworthy achievement in the activities of the Society.

The adoption of the Report was seconded by the Hon. Treasurer (Dr. MacDOWEL COSGRAVE) who laid emphasis on the Society's need for financial support. In spite of a generous response to a special appeal made in October, which brought in over £300, the year closed with a debit balance of nearly £600. The Report was adopted, and the officers re-elected. Dr. R. F. Scharff, having served for twenty years on the Council, becomes a permanent Vice-President, and Dr. A. Ball, F. Gifford, and L. E. Steele were chosen to fill vacancies.

An account of the year's work at the Gardens, with lantern and cinematograph illustrations was then given by Prof. J. A. Scott.

NOTES.

ZOOLOGY.

Acherontia atropos in Co. Mayo.

County Mayo may be added to the list of localities recorded by Rev. W. F. Johnson, where the Death's-head Moth has been found, as I possess a very fine specimen taken in a potato field at Dugort, Achill Island, some years ago.

ALEXANDER WILLIAMS.

Dublin.

Salpingus ater in Ireland.

In Dr. Nicholson's paper on Cavan Beetles, published in the January number of the *Irish Naturalist*, I notice he refers to *Salpingus ater* Payk., as not having been previously recorded from Ireland (*supra*, p. 5). Apparently Dr. Nicholson has overlooked the record of this rare insect in Dr. Power's list of Irish Beetles published in the *Entomologist* for 1878, and there is a reference to it in "A List of the Beetles of Ireland" (*Proc. R. I. Acad.*, 1902). During the summer of 1910 I found a single specimen on the top of Croaghpatrick, in county Mayo ("Clare Island Survey," *Proc. R.I.A.*, xxxi., part 28), it was captured on a hot July day, when numbers of typically lowland insects were noticed flying about the summit of the mountain, such as *Alianta incana*, *Malthodes flavo-guttatus*, *Ceuthorrhynchus quadridens*, &c. I have also found a *Salpingus* by sweeping plants at Blanchardstown, and at Tibbradden, in the Dublin Mountains, which apparently belongs to this species. As Dr. Nicholson remarks, *Salpingus ater* is regarded by British entomologists as a somewhat doubtful species, in all probability it is a mere form, or variety, of *Salpingus aeratus* Muls. Fowler mentions only one British locality—Aviemore (Invernesshire). I notice, however, that in the supplement to his work this beetle is recorded from the Isle of Wight, Delamere Forest, and the Peebles district in Scotland.

J. N. HALBERT.

National Museum, Dublin,

Snakes and their Victims.

I have not read Mr. G. A. Boulenger's Book on *Reptiles and Batrachians*, but in the excellent review of it, which I have just been perusing in the *Irish Naturalist* for January, I am struck with the statement (apparently made from the book) that—"No animals, except Monkeys, appear to recognise Snakes as dangerous, or to show any alarm at their proximity." Surely that is a proposition which the experience of any naturalist conversant with Snakes must enable him to contradict? The fear shown by Frogs introduced into a vivarium beside Grass Snakes, for example, must be familiar enough to anyone who has kept those Snakes in captivity. The Frog seems to know its natural enemy instinctively and *instantly*, and its fear is very evident in its frantic efforts to escape from the case. I have even heard one "squeal" (if that term be permissible in describing the voice of a Frog) before it was struck by a Snake; and the behaviour of a Mouse in the company of Adders is very similar. I cannot have any doubt, from such ocular demonstration, that these are not singular instances, but that other animals, besides Monkeys, must be able to recognise their deadly foe the moment they become aware of its presence. Perhaps the insertion of this note in the *Irish Naturalist* may bring expressions of opinion from others.

GEORGE BOLAM.

Alston, Cumberland.

The Last (?) Irish Golden Eagle.

Early in January, happening to call at Messrs. Williams & Sons, No. 2, Dame-street, Dublin, the well-known taxidermists, I saw, to my surprise and horror, a freshly killed Golden Eagle—a fine old male, weighing $8\frac{1}{2}$ lbs., and whose extended wings measured 6ft. 3in. It had been shot near Ardara, Donegal. This is no doubt the Eagle which my old friend Mr. Ussher told me he had seen on the Donegal coast, north of Slieve League in 1913. It has had no mate for some seasons, and is said to have inhabited the district for forty years. The middle toe of one foot was missing—showing that it had been trapped—but the wound was perfectly healed. After diligent search and enquiry this was the only Golden Eagle which Mr. Ussher could then trace with certainty as existing in Ireland—though he had heard rumours of one in Mayo.

What are we to think of those who are responsible for the extermination of this magnificent bird—whose powerful flight amidst the wildest glens and loftiest precipices added an irresistible charm to some of the grandest Irish scenery?

RICHD. M. BARRINGTON,

Fassaroe, Bray.

Lesser Spotted Woodpecker in Co. Roscommon.

On January 21st last while shooting in Co. Roscommon, about four miles from Athlone, I came across a Lesser Spotted Woodpecker (*Dendrocopus minor*). He was very tame, and stayed within three yards of me for several minutes. I could not make any mistake, as I have seen and skinned many Woodpeckers in Africa. He ran about like a Tree Creeper on the hazel stumps looking for insects. He was rather smaller than a Goldfinch, I should say, speckled grey on the back and white underneath—especially on the throat. The red patch on the head was very conspicuous. I visited the place several times since without seeing him again. According to Ussher and Warren ("Birds of Ireland") the last record for Ireland was in 1857 (which they look upon as doubtful), and previous to that in 1847, and one in 1848.

J. FFOLLIOTT DARLING,

The Bay, Athlone.

Pied Flycatcher and Corn Bunting on Migration at Tuskar Lighthouse.

On August 16th, 1914, at 1 o'clock a.m., a Pied Flycatcher struck the Tuskar lighthouse lantern, and has been forwarded to me in the flesh by Mr. Glanville, to whom I am greatly obliged for the specimen. This is the fourth example of this species obtained from Irish light-stations within twelve months time. (*Vide Irish Naturalist*, November, 1913, p. 220, and June, 1914, p. 148.)

Synchronously with the advent of the Pied Flycatcher at the Tuskar lantern a Corn Bunting struck the glass, viz., at 1 a.m. on August 16th last. Mr. Glanville kindly forwarded me this specimen. From what I can gather this appears to be the only instance to hand of a Corn-Bunting striking the lantern of a rock light-station round the Irish coast. Mr. Barrington has no records in his book, but perhaps can add some since 1900 when his work on migration was published.

C. J. PATTEN.

The University, Sheffield.

A Beaked Whale on the Wexford Coast.

This species (*Mesoplodon bidens*) is one of the rarest of the Irish Whales, only two previous records being known. With its long beak and white colour in the upper surface it forms rather a striking object. In the males there are two powerful teeth in the lower jaw and no others. Both of the earlier Beaked Whales, which were males, were stranded on the coast of Kerry. During last autumn a young female specimen measuring about twelve feet in length was cast ashore at Rosslare, Co. Wexford, and acquired for the British Museum, where its skeleton will probably be set up.

R. F. SCHARFF,

National Museum, Dublin,

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THE POST-GLACIAL LEVELS OF LOUGH NEAGH.

BY W. B. WRIGHT, B.A., F.G.S.

The very suggestive note by Mr. Stelfox in the January issue of the *Irish Naturalist* (pp. 8-9, *supra*), should excite considerable interest in the post-Glacial levels of our larger lakes. A study of the 25-foot or Early Neolithic beach around the coast of Ireland leaves no doubt that a great part of the country has been subjected to Post-glacial tilting or warping. This beach, which is only a few feet above present high-water mark in Donegal Bay and southern Wicklow, rises steadily as it is traced round the coasts in the direction of County Antrim, where it attains an altitude of 18 or 20 feet above high-water mark. The gradient is in reality very slight, the rise northward being on the average about an inch to the mile. It appears to be somewhat steeper in the north, and in the neighbourhood of Lough Neagh it might be taken at about two inches to the mile, this being a liberal estimate. On this basis the elevation of the outlet would only be about two feet greater than that of the south end of the lake, so that one would only expect this small amount of post-Neolithic submergence. This is quite a measurable quantity, and could no doubt be detected by careful observation, but it is clearly no explanation of the 30-foot change of level suggested by Canon Lett.

If, however, there is any truth in Jamieson's theory of isotatic recovery of the earth's crust from the depression caused by the ice-load, the warping must have been in progress ever since the disappearance of the ice, and not merely since the Neolithic period. One would thus expect the total post-Glacial warping to be much greater than the post-Neolithic warping. Now, no Glacial or late Glacial shoreline has been detected in Ireland which would afford a means of measuring the total post-Glacial warping of the country. There must of course have been a late Glacial shore-line like the well-known ones in Scotland and Scandinavia with their characteristic Arctic faunas and abundant

evidence of floating ice. The fact that none has been observed in Ireland may be due to defective observation, to complete removal by denudation or to the fact that it now lies below sea-level. At any rate it has not been found, and we are left with a mere presumption that the post-Neolithic warping only represents in part the total post-Glacial warping.

We can get an idea of the total amount of post-Glacial warping which might reasonably be expected, in this way. In Scandinavia the late Glacial and Early Neolithic shorelines are well known. Let us take a place which in its position relatively to the Scandinavian centre of glaciation corresponds roughly with that of Lough Neagh to the Scottish centre. Christiania or Stockholm would do equally well. At these places the gradient of the late Glacial shoreline is about two and a half times that of the Neolithic or Littorina-Tapes shoreline. Applying this ratio to the case of Lough Neagh we get a gradient of five inches to the mile for the total post-Glacial warping, and this would correspond to a submergence of five feet at the southern end of the lake. We are clearly still a long way from Canon Lett's figure, but it is interesting to see that the amount of post-Glacial warping recorded on the shores of Lough Neagh ought to be considerably greater than that which can be seen to affect the Early Neolithic raised beach around our coasts.

It would be easy to apply a test to Lough Neagh to see if its basin has really been affected by post-Glacial warping. It is found that if we join up the points where the Neolithic beach has the same altitude above high-water mark throughout Ireland, England, and Scotland, we obtain elliptical curves circling round the south-western Highlands of Scotland, *i.e.*, round the most powerful centre of glaciation in later Glacial times. These are called isobases, and it is obvious that the isobase which passes through the outlet of Lough Neagh ought, if it crosses the lake, to divide it into two portions, one of which, to the north of the line, ought to show traces of emergence of the land, and the other, to the south, only submergence. This isobase separates off Antrim Bay from the rest of the lake. One would therefore

expect to find a complete absence of submerged tree stumps or a submerged shore platform in this part of Lough Neagh. We ought on the other hand to find an abandoned shore-line a few feet above the surface of the lake at the head of the bay. It should be a perfectly simple matter to find out if this really is the case, and it is an enquiry well worth making, for, as has been pointed out above, it might easily lead up to a determination of the total amount of post-Glacial tilting.

I understand that the level of the lake has been considerably lowered by drainage within modern times, so that the water at the present day does not reach to the base of the cliff. This introduces a complication in the making of certain observations though it may facilitate others. For instance, it might be necessary to use a theodolite or some kind of level to find out if the abandoned shore-line at the head of Antrim Bay is higher than elsewhere. Measurements should be referred to the present water-surface, but they should be made on the same day or else a gauge post should be put up in the water for recording the change of level between the several observations.

I think Mr. Stelfox's suggestion as to a possible record of tilting in the Lough Neagh basin is one of the most valuable put forward in recent years in connection with this problem, and I hope he will pursue the subject and make definite observations of his own in connection with it. If he cannot find an opportunity to do this I shall some day try to make one for myself, but I live far from the district, and Mr. Stelfox is within easy reach of it.

Geological Survey, Dublin.

NOTES ON THE FAUNA AND FLORA OF LAMBAY.

BY THE HON. CECIL BARING.

THE statement, reprinted in the January number of this Journal (*supra*, p. 12) from Mr. Boulenger's *Reptiles and Batrachians*, that "Green Lizards let loose on Lambay have maintained themselves and multiplied," goes perhaps a little further than the facts warrant. The lizards in question, in common with some other kindred creatures which have been allowed to try their luck on Lambay have certainly maintained themselves, and a great delight they are to the eye, as they flash from one hiding place to another on a warm day; but although eggs have been found, there has been as yet no ocular evidence of reproduction, and it is too soon to speak with certainty of their multiplication.

In the three years 1907-8-9 some 2,200 reptiles and amphibians were turned out on Lambay, and since 1909 smaller additions have been made year by year. Mr. C. R. Walter, of West Bromwich, has given me valuable assistance in procuring them. Most of the batrachians, owing to lack of shelter and of suitable breeding places and to the voracity of the bird population, have failed to hold their own. Two kinds of lizards, on the other hand, the Green Lizard and the Wall Lizard, have found the surroundings congenial and have evidently survived several successive winters, although, as already said, there is no certainty that they have bred. The only reptile actually known to have produced young on the island so far is the so-called Glass-snake or Scheltopusik (*Ophisaurus apus*), of which some six or seven have been put out at different times. Tortoises, both American and European, hibernate successfully, but they are apt to come out too soon and thus to fall victims to cold and weakness in the early spring. A marked specimen of the Moorish Tortoise, which must have been on the island at least five years, was found roaming about Lambay Head last summer. There is no evidence of their breeding. Have tortoises, I wonder, been known to do so in a wild state in the British Isles?

Snakes I have not ventured to introduce on Irish soil. Slow-worms and the aforesaid Scheltopusiks are as near as I have come to it. Of the Skinks and Geckos only small numbers were let loose. They have not been seen since. Of the Eyed Lizards I think some may still be alive.

The following, for the possible benefit of future explorers, is a list of the species turned out :—

CHELONIANS.—*Testudo ibera*, *T. graeca*, *Emys orbicularis*, *Clemmys leprosa*, *C. caspica*, *Chelopus Reevesii*, *Chrysemys picta*, *Cistudo carolina*.

SAURIANS.—*Lacerta ocellata* (from Spain), *L. viridis* (from the Channel Isles and from the continent of Europe—also the blue-headed variety, from Turkey); *L. muralis* (chiefly from Italy), *L. vivipara*, *L. agilis*, *L. Galloti* (from Madeira and the Canaries), *Chalcides tridactylus* (from Sicily), *C. ocellatus*, *Tarentola Delandii* (from Madeira), *Anolis principalis* (from Minnesota), *Ophisaurus apus*, *Anguis fragilis*.

AMPHIBIANS.—*Bufo vulgaris* (both the common English and the large Spanish kind), *B. viridis*, *B. variabilis*, *B. calamita* (from Scotland,) *Pelobates fuscus*, *Rana temporaria*, *R. ridibunda*, *Hyla arborea*, *Bombinator bombinus*, *B. igneus*, *Salamandra maculosa*, *S. atra*, *Triton cristatus*, *T. taeniatus*, *T. alpestris*, *Molge vulgaris*, *M. pyrrhogastra*.

The present seems a good opportunity to put on record a few scattered notes and observations made since the “Natural History of Lambay” was published in the *Irish Naturalist* in 1907.

The Pheasants, Partridges, and Grouse turned out in 1906-8 have maintained themselves without artificial aid, but the Quails have disappeared. Rheas have bred every year since 1908, but they have never quite taken to a wild life. African Crowned Cranes, the gift of a friend (and a most glorious sight when on the wing), Demoiselle

Cranes, and Bustards have been liberated, but have either left us or failed to establish themselves. In 1909 some Chough's eggs were put in two Jackdaws' nests. One of the nests was destroyed by a Puffin. In the other one bird was hatched, but did not survive. Sand-martins have been seen on passage. A young male Montagu's Harrier met death by misadventure in August, 1909. A Carrion Crow, as already recorded was seen here in 1913, and in 1910 and 1911 a Magpie spent some months on the island, but does not appear to have nested. Dippers have not been seen again.

The Moufflons now number over a dozen. A male Chamois has been on the island since March, 1910; unfortunately it has been found impossible to procure a mate for him. The Brown Hare (*Lepus timidus*) has bred steadily since 1910, but without any considerable increase in numbers.

A new mammal can be added to Lambay's list in the shape of the Hairy-armed Bat (*Nyctalus Leisleri*, Kuhl.), of which species an individual was caught in August, 1913. The Whiskered Bat (*Vespertilio mystacinus*) is already recorded from Lambay, on the strength of a single specimen caught in 1905 but not preserved. Assuming the latter identification to be correct, it is noteworthy that the two species should make their home in Lambay. The one recorded in 1905 was caught in a tired-out state, in broad daylight, and may possibly have been a straggler from other regions; whereas the Hairy-armed Bat was taken, with another, out of his breeding place in a tree, and is undoubtedly indigenous. On the other hand, the claim of the Long-tailed Field-mouse (*Mus sylvaticus*) to be considered a Lambay mammal seems to me doubtful; it rests on a single specimen caught by me in 1905, which at the time I took to be a House-mouse. No Field-mouse has ever been seen on Lambay since, although we have kept our eyes open for him and even set a small price on his head. The "grass-mice" which we come across when mowing the meadows have always turned out to be House-mice.

The Orange-tip Butterfly (*Euchloe cardamines*) occurs abundantly; so does the Ringlet (*Epinephele hyperanthus*).

Mr. W. F. de Vismes Kane has collected the following additional moths and microlepidoptera:—

NOCTUIDAE.

Thyatira derasa.
Acronycta psi.
Miana fasciuncula.
Noctua triangulum.
Noctua festiva.
Agrotis exclamationis.
Aplecta nebulosa.
Hadena deracea (very abundant).
Leucania conigera.

MICROLEPIDOPTERA.

Xylopoda fabriciana.
Cnephasia musculana.
Micropteryx calthella.
Plutella maculipennis.
Clepsis rusticana.
Eupoecilia maculosana.
Gelechia ericetella.

GEOMETERS.

Melanippe fluctuata. *Eupithecia satyrata*.

The Horse-leech occurs on Lambay. I understand from Mr. Halbert that it was accidentally left out of the 1906 list.

The brittle-star *Antedon bifida*, was met with at Carrick Dorrish, April, 1907. I have a note of *Idotea* (?) *viridis*, also in 1907.

Among flowering plants, *Orchis Morio*, found in 1908 in six different places, and *Circaea lutetiana* (under Hill Cottage), may be added to the Lambay list. In March, 1907, three patches of Hard Fern (*Blechnum Spicant*) were found by Mrs. Baring between Salt pans and the Harper.

Bishopsgate, London.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a pair of Elands and a Brindled Gnu from the Duke of Bedford, a Bonnet Monkey from Mrs. Bryan, a Jerboa from Mrs. Tombe, and a Ring-necked Parrakeet from Mrs. Mullally. Four Lion cubs (three males and a female) have been born, the parents being "Red Hugh" and "Nigeria;" also two families of Dingo puppies.

The "record" collection of the four anthropoid genera has been unfortunately broken by the recent death of the Orang-utan. The Gorilla continues, however, in good health.

DUBLIN MICROSCOPICAL CLUB.

February 10.—The Club met at Leinster House, D. McARDLE (President) in the Chair.

W. F. GUNN showed a slide of the gizzard of an Indian species of locust, mounted dry, and drew attention to the efficient apparatus it provided for triturating and reducing the food before passing into the stomach. Attached to the interior walls of the organ is a complicated arrangement of teeth, spines and ridges which are strongly chitinised and in some parts quite horny in texture. These parts are controlled by a system of strong circularly arranged muscles which enable them to act upon each other.

Prof. G. H. CARPENTER showed a transverse section through the body of a larval Newt, in which the development of the arch of a vertebra above the region of the notochordal sheath was exceedingly well shown.

C. J. MCCARTHY showed feelers of the Ox Warble-fly (*Hypoderma bovis*) pointing out the sub-globular shape of the terminal segment which fits into a hollow of the inflated cup-like second segment.

Dr. G. H. PETHYBRIDGE exhibited specimens of wheat received in August from Co. Kerry suffering from the disease known as "White Heads." It is said to be caused by a fungus known as *Ophiobolus graminis*, Sacc., which is found at the bases of the stalks, forming a blackish mycelial felt between the leaf-sheaths and the haulms. Microscopical preparations were exhibited showing this black mycelium, as also were others showing the presence of the fungus within the tissues of the haulms. No spores of any kind were present. The fungus is said to develop its perithecial form of fructification during the winter on the stubble, but on specimens kept under observation for this purpose the perithecia had not up to that time been developed. It was hoped by means of them to isolate the fungus in pure culture and study its life history more closely, but owing to the non-development of the perithecia this could not be done.

BELFAST NATURALISTS' FIELD CLUB.

SEPTEMBER 5.—GEOLOGICAL SECTION.—An excursion to the quarries in the neighbourhood of Carnmoney was held on this date. The rock in the quarries visited is fine grained dolerite, but in each quarry a mass of amygdaloidal structure appears. In this R. Bell pointed out the following minerals :—Thomsonite, gahnite, saponite, fayalite, chabazite, and calcite.

SEPTEMBER 19.—On this date the Geological Section had an excursion to Cloghfin and Islandmagee district. The following fossils were found :—*Avicula contorta*, *Exogyra conica*, *Pecten orbicularis*, *P. quinqucostatus*, *Ventriculites cribrosus*, and *Etheridgia mirabilis*. In the basalt cliff near Whitehead the minerals gmelinite and analcite were noticed.

MARCH 16.—GEOLOGICAL SECTION.—A meeting was held in the Club room in the Museum, College Square, North. The evening was devoted to the exhibition of specimens. W. J. C. TOMLINSON exhibited specimens of calcite from veins in iron ore, Rathkenny, Co. Antrim; from "pockets" in chalk, Moneymore, Co. Derry; and from vein in Carboniferous limestone, Desertmartin; barytes and calcite from haematite vein, Cumberland; quartz crystals on haematite-vein material; iron pyrites and quartz crystals on haematite; columnar basalt from dyke in Carr's Glen, Belfast.

MISS REA, on behalf of Dr. Charlesworth, showed fossils, *Hippurites*, sp. ? *Cancer patagonicus*, Cuttlefish with ink bag *in situ*, amber enclosing insects.

R. WELCH exhibited rude flint implements from raised beach areas in Co. Antrim, and, for comparison, similar types from Grimes Graves, Suffolk; also a collection of Pleistocene and Holocene Land and Fresh-water Mollusca from deposits in Ireland and S.E. England.

R. BELL exhibited specimens of *Nautilus striatus* from Lower Lias, at Barney's Point; *Ammonites Bucklandi*; also orbicular granite from Mullaghderg, Co. Donegal. Miss S. BLACKWOOD showed a collection of specimens of rocks from the English lake district.

OBITUARY.

GEORGE J. FOGERTY, M.D., R.N.

Irish naturalists will hear with deep regret of the death of Dr. George Fogerty, of Limerick, at the age of sixty-four. Since his retirement from the medical service of the Navy he lived in his native town, and took a prominent part in the founding and carrying on of the Limerick Field Club, and was keenly interested in all matters relating to the natural history and archaeology of the south and west of Ireland. His advice and help were always at the service of scientific visitors to Limerick and Clare, and his cheerful presence stimulated work at many excursions of the Field Club Union and the local Society.

NOTES.

ZOOLOGY.

The Death's-Head Moth in Ireland.

Considering how universal is the cultivation in Ireland of its food-plant, the Potato, it might have been supposed that the Death's-head Moth should have an equivalently widespread distribution in this country, and should not be very rare. I have been told that when digging potatoes "quite large" pupæ are sometimes turned up, which are always destroyed at sight by the gatherers. The comparison was made in direct reference to the much smaller chrysalis of the Great Swordgrass Moth. Would it seem improbable that some of these large pupæ may belong to *Acherontia atropos*? If the same practice of destroying them is followed everywhere, it may possibly have some share in accounting for the apparent rarity of that species.

W. E. HART.

Kilderry, Londonderry.

The Lesser Spotted Woodpecker.

Dr. ffolliott Darling is such a welcome and rare correspondent to the *Irish Naturalist*, that one hesitates to criticise his contribution about the Lesser Spotted Woodpecker in Roscommon (*supra*, p. 64).

When he states that the bird seen was "rather smaller than a Goldfinch," his note is not convincing. Saunders gives the length of this Woodpecker as six inches, and that of the Goldfinch as five inches (*Manual of British Birds*, last edition, pp. 174 and 278), and from other text books we gather that the only point in which the Goldfinch exceeds this Woodpecker is in the length of the tarsus. The Lesser Spotted Woodpecker is the smallest European representative of the genus, and it does not appear to extend further into the African continent than Algeria and Tunisia. From what part of Africa did Dr. Darling obtain his specimens? In England it has mainly a southern distribution, and is said to be partial to tall trees; yet the Roscommon bird was looking for insects on hazel-stumps. I trust Dr. Darling will not consider these criticisms as prompted by any other motive than the desire to arrive at the truth.

RICHD. M. BARRINGTON.

Fassaroe, Bray.

Irish and British Birds.

In the *Proceedings of the Sheffield Naturalists Field Club* (vol. ii., 1914, pp. 24-26), Professor C. J. Patten writes on some birds of the Sheffield district which are rare or unknown in Ireland. In making the field observations thus recorded the author had the advantage of the company of the late Edward Williams to whose memory the publication of these notes forms a pleasing little tribute. Among the species mentioned is the Tree Sparrow not long ago recognised as an Irish migrant by Prof. Patten at the Tuskar light station.

Bird Migration.

Prof. C. J. Patten gave two lectures on Bird Migration in last year's courses of the Royal Institution, London, dealing with general questions concerning the routes followed by migrants, and drawing his illustrations largely from observations made by himself at the Tuskar and Inishtrahull lighthouses.

Black Redstart and Roseate Tern in Co. Dublin.

On Saturday, 20th February, I saw a specimen of that rare bird, the Black Redstart, at a place quite close to Dublin. A friend of mine who is a very keen ornithologist has had it under his observation for the last three weeks, and we hope it may escape the fate usually meted out to rare visitors who by accident or otherwise find themselves in this country. My friend tells me that four years ago he saw a bird of the same sort at almost identically the same place. Early in June last, accompanied by the same friend, we saw two beautiful specimens of the Roseate Tern, also within a short distance of Dublin, but we could not find any trace of them having nested at any of the breeding places of the other terns on the Dublin coast during the summer.

GEO. BROWN CRAWFORD.

Rathgar, Dublin.

Black Rat in Dublin.

I may also mention a rather rare animal I chanced to come across in November last at one of the stores near Ringsend, namely a Black Rat. It was one of the kind (*Mus rattus*) with large ears and an extremely long tail, and may have come ashore from some vessel in the port. I mention it here as I have not seen a Black Rat now for a number of years.

GEO. BROWN CRAWFORD.

Rathgar, Dublin.

Disappearance of Squirrels.

I have had the same experience here that Mr. Barrington has had at Fassaroe (*supra*, p. 112). Squirrels have practically vanished. Here, however, they seem to have gone in a comparatively short time, *i.e.*, in 1914. In 1913 we had a fine crop of nuts, Kentish cobs, filberts, etc., but the squirrels came down on them just as we were going to gather them, and in two days every nut was gone. Last year they did not touch one, and we gathered a fine crop. They were mischievous little rascals, but I miss them and hope they will return.

G. H. PENTLAND.

Drogheda.

Dolphins in the Boyne.

Last autumn, about the last week in October, I heard that two "porpoises" were stranded in the Boyne near Queensboro', about a mile from the sea. My daughter told me they were about six feet long, nearly black above, white below, and had long beaks full of small teeth. When she saw them they were not long dead. I went there next day, and was disappointed to find that they had been skinned and a good deal mutilated. However, the beak of one of them was intact. It was about a foot long and full of small, sharp teeth, about forty-five on each side, that is, about ninety teeth in the upper jaw, and about the same number in the lower. I judged from this that the two unlucky beasts were specimens of *Delphis delphinus*, and Dr. Scharff, to whom I described them, thinks so too. I went back a few days later to secure the skulls, but found the tide had drifted the animals into deep mud, and I could not get nearer than twenty yards from them. There were eight Great Blackbacked Gulls feeding on one of them, so greedily that they absolutely refused to move. This, the so-called Common Dolphin, is by no means common in these seas, so perhaps this is worth putting on record.

G. H. PENTLAND.

Drogheda.

The Speckled Otter.

In July, 1909, I published a note in the *Irish Naturalist* (vol. xviii., pp. 141-2, pl. 2) on the occurrence in Ireland of a variety of the Otter in which the fur is dotted all over with white spots. It was obtained in Lough Sheelin, County Cavan. A few weeks ago Miss Knowles showed me an Otter skin very much like the one described and figured in the number of the *Irish Naturalist* referred to, and I now learn from her that it came from Kilcolgan, in the County Galway. This village lies at the mouth of a small stream, unconnected with the Shannon drainage, which empties its waters into Galway Bay.

R. F. SCHARFF.

National Museum, Dublin.

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THOMAS R. HEWITT.

THOMAS ROBINSON HEWITT.

THE volumes of this Magazine contain records of the life-stories of many veteran Irish naturalists and of not a few who have been taken from the midst of their useful activities while in middle life. In Thomas R. Hewitt, who died in Dublin on the 23rd March, 1915, at the early age of twenty-seven years, Ireland has lost a young zoologist of exceptional promise, who would assuredly have risen to very high distinction had his life been spared. Yet in the brief time allotted to him he has achieved enough to ensure grateful remembrance.

Hewitt was born near Crossgar, Co. Down, on the 7th September, 1887. From boyhood in the local school and on his father's farm, he passed to two sets of winter classes, as organized by the Department of Agriculture. Thence he gained an agricultural scholarship at the Royal College of Science, which he entered in October, 1909. Passing through the three-years' course with credit, and taking several prizes, he obtained the Associateship of the College as well as the National Diploma in Agriculture in 1912. The opportunity of a research assistantship in agricultural zoology then came to him, the appointment being intended especially to facilitate investigation into the life-history of ox-warble-flies, which had been in progress since 1904. Into this work Hewitt threw himself with enthusiasm and soon showed a manifold aptitude for the research, which involved careful studies of insect anatomy as well as extended experiments and observations on cattle, the winters being spent in the College laboratory, and the summers at the Department's Ballyhaise station in Co. Cavan. Hewitt rapidly developed admirable skill in minute dissection and remarkable powers as a draughtsman. The beautiful plates illustrating our joint paper on the Reproductive Organs and newly-hatched Larva of the Warble Fly¹ were reproduced directly from his pen-and-ink

¹ *Sci. Proc. R. Dublin Soc.*, vol. xiv., no. 19, 1914.

sketches. He also showed great care and critical judgment in the field experiments and observations that he carried out at Ballyhaise. The results of these were published last autumn in this Magazine,¹ and more fully in a Report² for the Department's *Journal*. By patient and long-continued watching, Hewitt was able to see the tiny newly-hatched Hypoderma-larvae bore into the skin of cattle, and thus to settle a question which had been disputed among agricultural entomologists and veterinary surgeons for twenty years. In the intervals of his work on this subject, Hewitt dealt profitably with other insect-studies such as the Larva and Puparium of the Frit-fly³ and the hibernation of the Woolly Aphid in apple-cores.⁴ A valuable report on Eel-worms in Narcissus bulbs,⁵ the result of much careful observation and field experiment contains further results of his activities, and a bye-product of this last enquiry was the discovery of several species of Nematoda⁶ new to Ireland.

Such a record of two and a half years shows Hewitt's capacity for research, and moreover he voluntarily shared in some of the teaching of the zoological laboratory. We who knew and valued him looked forward to a prolonged association in the work that he did so well. It was the more praiseworthy, because he was frequently hindered by ill-health, and his brave habit of "making the best of himself" appealed to all. His cheerfulness and trustworthiness won the affection of his fellows, as his talents moved their admiration. And even now as we realise the loss we have suffered through the sudden removal of our friend, his faith, his hope, his devotion to duty speak to us from the silence, and help to lighten our way.

G. H. CARPENTER.

¹ *Irish Nat.*, vol. xxiii., 1914, no. 8.

² *Journ. Dept. Agric. and Tech. Instr., Irel.*, vol. xv., 1914, no. 1.

³ *Sci. Proc. R. Dublin Soc.*, vol. xiv., 1914, no. 23.

⁴ *Journ. Econ. Biol.*, vol. viii., 1913, pt. 2.

⁵ *Journ. Dept. Agric. and Tech. Instr., Irel.*, vol. xiv., no. 2, 1913.

⁶ *Irish Nat.*, vol. xxii., 1913, no. 8.

EIDER-DUCKS AT INISHTRAHULL.

WITH REMARKS ON THE STATUS OF THIS BIRD IN IRELAND.

BY PROFESSOR C. J. PATTEN, M.A., M.D., SC.D.

ON Monday, September 8th, 1913, I observed two large ducks on the sea, about two hundred yards off the east headland of Inishtrahull, Co. Donegal. With the aid of binoculars, I diagnosed them as Eider-Ducks (*Somateria mollissima*), in female or immature plumage.¹ As they swam in close to the island their identity with the naked eye became an easy matter. They were not by any means shy; however, if suspicious of danger they made out to sea at rather an accelerated speed, not attempting to elude observation by diving. They did not proceed far out, but showed a decided inclination to turn about and come in among the reefs in search of food. By sitting down on the cliff and keeping quiet they afforded me an opportunity of viewing them at close quarters; sometimes they drew in too close and disappeared under the shadow of the cliff. In their indifference to man's presence they reminded me more of domestic than of wild birds. At length they made off, steering along the southern aspect of the island, until in the distance they were lost to view. In the evening they were seen in a little creek called Portahurry on the west side. Here they remained quietly feeding among the seaweed-covered rocks, until a boat, arriving from Tory, frightened them off, and they were not noticed again this day. However, two Eider-Ducks, in female or immature dress, also tame in their habits, and presumably the same two birds, frequented the island for several days after. They were generally seen feeding among the rocks

¹ At that distance it was not possible to distinguish them from female or immature King-Eiders (*Somateria spectabilis*), the plumage markings of the two species being somewhat similar, and in both cases sombre-shaded. To differentiate, it is necessary to examine the species by hand, when it can be seen that the central tracts of feathers of the upper segment of the beak hardly reaches half-way to the nostrils in the Common Eider, whereas in the King-Eider these feathers reach as far as a line with the nostrils. Fortunately, as the text of this paper states, I received the head of a duck later on, which I identified as that of a Common Eider, and probably belonging to one of the two seen this day.

close to the water's edge. Their presence aroused the attention of numbers of the islanders. Late on Sunday night, September 14th, I learned that one of the birds had been shot at about 3.15 p.m. and had *already* been cooked and eaten! The islander who secured it was indeed welcome to the carcase for culinary purposes, but I much regretted at the moment that he did not afford me the opportunity of taking off the skin, or at least of seeing the bird in the flesh, in order to enable me to establish the identification of the species beyond doubt. Luckily a thought flashed across my mind, namely: What had become of the head? Was it also relegated to the pot, thrown to, or purloined by, a cat or dog, or was it still obtainable? In reply to my message I was glad to learn that it had been cast into a cornfield, and that a hunt would be made for it in the morning. At 6.20 p.m., September 15th, an islander brought it to me remarking apologetically that he did not think that a plain-coloured and ugly-shaped duck would be of any use to me, and so he and some friends had a Sunday feast off it! Sure enough the head was that of an immature Eider-Duck (*Somateria mollissima*). But it was not the first recorded from Inishtrahull. Mr. Barrington¹ has records from a light-keeper here that two were noted as "rare visitors" on February 2nd, 1890, and on November 5th, of that year three more were reported from the same station. None of these specimens, however, was received; nor am I aware of any Inishtrahull specimen being examined in the flesh and identified prior to the capture of the specimen mentioned in this paper.

STATUS OF THE EIDER-DUCK IN IRELAND.

The status of this species in Thompson's time² was that of "an extremely rare visitant," and altogether only about four definite records of its occurrence had then been collected, viz.:—One from Co. Wexford, 1834; one from Co. Dublin,

¹ "Migration of Birds," *Analysis of Reports*, 1881-1897, p. 261.

² "Natural History of Ireland," vol. iii., 1851, p. 114.

1840; two from Mayo, 1842.¹ Watters² whose book appeared a few years later, added nothing; he simply reiterated what Thompson had stated. After a lapse of thirty-four years A. G. More,³ who regarded the Eider-Duck as "a very rare winter-visitor," added some ten records, repeating these, without additions, in the second issue of his "List of Irish Birds" published five years later, viz., in 1890. Ussher, however, by gleaning in a most painstaking way from every available source of information, published or unpublished, was able to show in his book, which appeared only five years later,⁴ that more than thirty records were extant. Filling in many gaps which his predecessors had missed, he was enabled to place the status of the Eider-Duck on a different footing in Ireland. He certainly removed the notion that the bird was an "extremely rare" or even a very rare visitor, and he called it "a rare and irregular winter-visitor." He pointed out the important fact that while records came from all sides of Ireland, they were more frequent from the north coast, especially Rathlin, where Eider-Ducks had been frequently shot. He drew attention to the fact that it is surprising that this island is not more frequently visited owing to its proximity to Islay—twenty miles of water separating the two—for the species breeds and occurs in large flocks in the latter island. Since Ussher's book came out remarkably few records from Ireland have been published; so much so that Dr. Hartert in⁵ his book published twelve years later, gives a total of "under forty recorded from all provinces." He designates the Eider-Duck in Ireland as a "rare vagrant." Between the publication of Ussher's

¹ Two from Kerry, 1843 and 1845-6, named King-Eiders by Thompson, were many years afterwards identified as Common Eiders by Ussher, *vide* "Birds of Ireland," 1900, pp. 211, 212.

² "Birds of Ireland," 1853, p. 213.

³ "List of Irish Birds," 1885, p. 31.

⁴ "The Birds of Ireland," 1900, p. 211, *et seq.* N.B.—The occurrences recorded by Mr. Barrington in his work on "The Migration of Birds at Irish Light-stations," which appeared the same year, 1900, are incorporated in Ussher's book.

⁵ "A Hand-List of British Birds," 1912, p. 144.

and Dr. Hartert's works the following notes on this duck appeared in the *Irish Naturalist* :—

An Eider-Duck obtained at Malahide, Co. Dublin in November, 1902 (E. Williams in vol. xii., April, 1903, p. 112).

Two obtained in Belfast Lough, on August 19th, 1905 (R. Lloyd Patterson in vol. xiv., November, 1905, p. 248).

The records published since Dr. Hartert's book appeared, though not many, are highly interesting. For instance we learn, for the first time, of the nesting of the Eider-Duck in Ireland. In regard to this highly important discovery the following data have been supplied by Mr. H. W. Robinson, in "British Birds," vol. vi., 1912-13, p. 106. Two nests were found on a small island off the coast of Co. Down (corrected to Co. Donegal on p. 166), on June 2nd, 1912, and the two pairs of birds were seen. The nests were placed at either extremity of the island three-quarters of a mile apart.

On November 12th, 1912, an Eider-Duck was obtained in Wexford Harbour, being only the third record from this county, the previous two being in 1834, and in 1876 (A. R. Nichols in the *Irish Naturalist*, vol. xxii., January, 1913, p. 20.)

In the autumn of 1913, several Eider-Ducks appeared on different occasions round Rathlin as recorded by Miss Best and Miss Haviland, in the *Irish Naturalist*, vol. xxiii., January, 1914, p. 12. The first four were seen much about the same time that I observed the two at Inishtrahull. The actual data are as follows :—"Four ducks were noticed swimming off Church Bay on September 17th and 19th, and were then joined by a drake. On the 20th three birds were shot and the others disappeared. On October 1st, however, four more ducks were seen at the same place." The islanders say that the species "is not uncommon in the spring and autumn round Rathlin. The lighthouse-keepers say that as many as *fifty* or *sixty* are seen together at once." Reviewing the statistics which I have furnished, it seems that as far as the north-eastern

seaboard of Ireland is concerned the Eider-Duck can hardly be regarded as a rare bird, but rather as one which appears "in limited numbers," in other words what we are accustomed to call a "scarce visitor." Here again if the evidence of the light-keeper be accurate it is not quite so easy to decide that the bird is a scarce visitor, when sixty appear together. However, this matter requires further personal investigation carried out by a competent ornithologist. Whether the Eider-Duck occurs as a regular annual visitor in the vicinity of Rathlin is also a matter which cannot be determined without further systematic investigation carried out over several successive seasons. We must take, with caution, the islanders' statement that the bird is not uncommon in spring and autumn round Rathlin though, personally, I see no reason to set it aside. The evidence, so far as it goes, is useful, but quite insufficient to put on permanent record. There remains, however, an important question to be considered: Were these Eider-Ducks, seen at Inishtrahull and Rathlin, Scotch birds bred, say, in Islay, the nearest nesting-quarters to Ireland? Not, by any means, necessarily so. On the contrary, the two which came under my personal observation, judging from their marked tameness, and their juvenile deportment, looked as if they belonged to Inishtrahull or, at all events, had not wandered far from their place of nativity. Furthermore the condition of the bones in the head which I obtained indicated marked immaturity, the bird itself being probably not much beyond the stage of a "flapper." On the other hand, these Eiders-Ducks of tender age may have been wanderers, fatigued to a degree, hence their apparent tameness. This idea I do not favour, for having reached the shelter of the island and having obtained plenty of food among the reefs, their fatigue would pass off after a day or so. Hence fatigue "tameness" could not keep possession of them for a week; yet it has been pointed out that on each occasion, on the several days that they were seen, they were remarkably tame. It is now an established fact that two pairs of Eider-Ducks have been found breeding in Ireland; and we have no evidence

to show that this species has ceased doing so. It is very likely indeed that it nests in small numbers on some of the islands or islets off the north coast of Ireland adjacent to the Scottish nesting-quarters. When this can be proved, the status of the bird will then be : Resident¹ in very small numbers in the north or north-eastern coastlands of Ireland, the numbers being augmented by migrants probably every autumn, and winter, To the other provinces of Ireland this duck may still be designated as a rare and an uncertain visitor, appearing mainly in the cold months of the year.

The University, Sheffield.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a number of Irish birds from Mr. W. W. Despard. A pair of Wolves have been received in exchange. The greater number of the Salmon and Trout eggs received in December have been successfully reared through the larval stage, and thousands of fry may now be seen in the Hatchery boxes. Some account of an interesting disease that has lately troubled the Gorilla is given on the next page in the proceedings of the Dublin Microscopical Club.

¹ It has become somewhat customary to apply the term "resident" to a species which breeds and is also found in the country at other times of the year. But here it does not follow that individual birds which breed remain. For example, many Song-Thrushes, Blackbirds, and other well-known birds which breed in Ireland, migrate, though certainly not all of them. The term "resident" is, however, not applied to a species which breeds with us, when none of its individuals remain after the nesting duties are finished, *e.g.*, Swallow, Willow-Warbler, Cuckoo, &c. And yet the latter in a very cogent sense are to be regarded as "residents" which are only obliged to move off in winter in search of food, but which return annually, with great punctuality and with not only patriotic but even parochial interests to their residential sites, that is, to their breeding homes. In the restricted sense of the term, the "resident" birds—that is to say, the purely stationary species, as the Jay and Dipper, also the stationary individuals of migratory species, as the Skylark, Blackbird, and Song-Thrush—are in our latitudes very much in the minority.

DUBLIN MICROSCOPICAL CLUB.

MARCH 10.—The Club met at Leinster House, D. MCARDLE (President) in the Chair.

Prof. J. A. SCOTT showed some preparations made from pus derived from a tumour which grew on the right side of the neck and face of the Gorilla at present in the Gardens of the Royal Zoological Society of Ireland. Microscopical examination of these preparations showed the case to be one of actinomycosis. Treatment carried out on the lines suggested by this diagnosis has greatly reduced the tumour and gives promise of a complete cure.

This diagnosis was rendered difficult by the very small size of the particles in the pus; usually these are sufficiently large to be just visible to the naked eye, and have a pale yellow colour in comparison with the fluid in which they lie, receiving the name of sulphur granules. In the present case they were so small as to be only visible with a lower power, but when seen had a distinct radial arrangement and characteristic grouping. Some of these when separated were teased apart, and on staining by Gram's method showed very plainly a mycelial structure composed of very fine threads with the protoplasm very much separated, giving the fibres a beaded appearance, these beads in the centre of the masses appearing like micrococci. Nothing suggesting spores was observed. In many cases the ends of the mycelial threads which radiate are thickened like clubs, these forming the "ray" which gives the name of "ray fungus" to the disease, but in this case these clubs were completely absent.

Very many forms are included in this group, all of them associated with the soil. It is generally accepted that infection occurs from injury to some part, generally the mouth or tongue, with straw or coarse herbage by which the mycelium is actually implanted in the tissues under the skin or mucous membrane. In this situation it grows, and by stimulating the tissue cells slowly produces the tumour. No method of immunizing animals against the disease is known. The treatment which is successful in most cases consists of the administration of some substance containing a large proportion of iodine in its composition. Several such substances have been used from time to time, depending on the position of the growth and the animal affected.

N. COLGAN exhibited a series of slides illustrating the dermal deposits of two Co. Dublin Holothurians, *Cucumaria Hyndmani* (Thompson) and *C. lactea* (Forbes and Goodsir), the material being furnished by specimens dredged recently off the Skerries islands. The first of these species is rather rare in Co. Dublin waters; the second, which usually occurs in the chocolate-coloured form named *Ocnus brunneus* in Forbes's "British Star-fishes," is quite frequent. The shape of the body deposits in *C. Hyndmani* was shewn to vary greatly with age. While small specimens gave thin, flat plates with numerous wide perforations, much larger and presumably older individuals gave solid elliptical deposits in which the perforations had become quite obsolete or were reduced to small shallow pits. A piece of skin from one of the larger specimens with these thickened deposits appeared as if covered by a layer of oblong potatoes, the pits or obsolescent perforations representing the "eyes."

In the Holothurians the closest apparent approach to a truly bony structure is found in the collar of calcareous plates surrounding the gullet. The structure of the collar segments of *C. Hyndmani* was shown in one of the slides. They were seen to be made up of a close felt or net-work of minute, interlocking, perforated plates, similar in form to the delicate deposits found in the arborescent tentacles of this species. The collar plates are, in fact, formed by a congestion of the free deposits found distributed in various shapes and sizes throughout the integument of the animal.

APRIL 12.—The Club met at Leinster House, D. McARDLE (President) in the Chair.

Prof. G. H. CARPENTER showed stained preparations demonstrating the presence of the microsporidian parasite *Nosema apis* within the gastric epithelial cells of bees suffering from "Isle of Wight disease." The trophozoites or feeding-stages of the *Nosema* were distinctly visible in the cells of the bee's chyle-stomach, displacing the nucleus, as described and figured by Fantham and Porter (*Mem. Liverpool School of Tropical Medicine*, 1913).

BELFAST NATURALISTS' FIELD CLUB.

MAY 9, 1914.—EXCURSION TO HOLYWOOD.—About fifty members, under the conductorship of R. May, went to Holywood, where they inspected the maypole, St. Columbkille's Church, the parish church, and the ancient tumulus. They were afterwards entertained to tea by a member of the Club, Mr. F. A. Heron.

JUNE 27.—LITTLE DEER PARK, GLENARM.—The members, to the number of twenty-eight, under the leadership of R. J. Welch, left Belfast by train for Larne, and drove along the Antrim Coast to the Little Deer Park. Frequent stoppages were made by the way, and the features of geological interest pointed out by the Conductor and R. Bell. Tea was served on a grassy plateau below Hunter's farm, and three new members were elected.

SEPTEMBER 5.—ROSTREVOR.—Owing to the outbreak of war and consequent dislocation of train service, the Committee decided to abandon this excursion.

OCTOBER 29.—CONVERSAZIONE.—The Winter Session opened with a Conversazione held in the Carlton Hall. Tea was served from 7 till 8 o'clock. The following is a list of the exhibits:—WM. GRAY, Large Ammonite and Chameleon; R. MAY, Bed of Ammonites from the Lias; R. BELL, Local and Continental Fossils; JAMES ORR, Fossil Fish from Italy, *Lepidodendra* from Roscommon, Scotch Pebbles from Ayrshire; JOSEPH WRIGHT, Recent Foraminifera and Sponge Spicules from the Carboniferous (under microscope); C. H. WADDELL, Mosses; S. A. BENNETT, English Plants rare in or absent from Ireland; MISS S. BLACKWOOD, Plants collected in the English Lake District; A. W. STELFOX, *Sibthorpia europaea* (living plant) from its only Irish station; Miss M. W. REA, Mounted Sea-Weeds; S. WEAR, Photographs of Natural History

subjects, including many rare plants photographed *in situ*; N. CARROTHERS, Plants collected during Club's summer excursions, including *Spiranthes Romanzoffiana* and *Teesdalia nudicaulis* from Washing Bay, Co. Tyrone; JOHN HAMILTON, Case of Lantern-Flies; R. J. WELCH, Mollusks, and a series of rude flint implements of uncertain age from North-east Antrim and Derry and Larne Lough; N. H. FOSTER, Woodlice, False Scorpions, Centipedes, and Millepedes collected during Long Excursion; Centipede from Australia. At 9 o'clock a short business meeting was held—the Vice-President, Dr. A. R. DWERRYHOUSE, F.G.S., in the Chair—when five new members were elected. N. H. FOSTER then exhibited a series of lantern slides illustrative of British Birds and their nesting habits, and the meeting concluded shortly after 10 o'clock.

NOVEMBER 17.—PRESIDENTIAL ADDRESS.—R. LLOYD PRAEGER gave a most interesting and instructive address on "Problems of dispersal and distribution in the Irish flora." The paper was discussed by Rev. C. H. WADDELL, Messrs. C. M. CUNNINGHAM, and N. H. FOSTER. Three new members were elected.

DECEMBER 15.—F. J. BIGGER gave a paper on "Social Archæology," dealing with a most interesting area in County Leitrim, especially that near Lough Melvin. The paper was well illustrated with lantern slides, mostly from his own negatives.

JANUARY 19.—Dr. J. K. CHARLESWORTH lectured on the "Palaeontological Evidences of Evolution." The lecture was well illustrated with lantern slides of extinct animals. A discussion followed on the probable causes of the extinction of Dinosaurs and other great beasts, the excessive formation of bone and their great size being instanced among others as likely reasons.

FEBRUARY 16.—W. B. WRIGHT, B.A., F.G.S., delegate from the Irish Field Club Union, gave a lecture on "Recent Advances in Glacial Geology." An animated discussion followed in which the President (R. LI. PRAEGER), Messrs. W. A. TRAILL, A. W. STELFOX, S. A. BENNETT, R. J. WELCH, and W. J. C. TOMLINSON took part.

MARCH 23.—Three short papers were submitted to this meeting. R. LI. PRAEGER spoke on "Sedums or Stonecrops," and displayed a large series of native and foreign plants belonging to this group. W. J. C. TOMLINSON read a paper on "The Plants of Lough Neagh," the more interesting species being illustrated by specimens from the Club's herbarium. Miss M. W. REA spoke on "Mycetozoa," illustrating her remarks by a series of mounted specimens, also details of their structure under the microscope.

The Mycetozoa comprise a group of organisms which in the early stages of their life-history show affinity with the lower forms of animal life, while, on the other hand, in the fruiting period they belong to the Fungi. On being moistened the spores germinate and swarm-cells emerge, each possessing a nucleus, and one or more digestive vacuoles. They soon develop a flagellum by the aid of which they swim about. At the opposite end of the swarm-cell delicate pseudopodia convey food to the vacuoles, in which it is digested, the waste matter being left behind. After a time the swarm cells unite to form a plasmodium or mass of naked protoplasm.

(In the Fungi the swarm-cells form a mycelium or system of branching threads). This plasmodium creeps about on rotten wood and on the inner side of bark. When about to form sporangia, the protoplasm emerges to the light and concentrates in small portions, eventually forming sporangia of very varied types. Some of them have very elaborate devices for liberating the spores. They are found in all parts of the world, 150 species being described from the British Isles. Seventy species have been collected in Ireland, but it is hoped that further search will lead to the discovery of many more.

APRIL 13.—The fifty-second annual meeting of the Club was held in the Museum, College Square North. In the absence of the President and Vice-President, the chair was occupied by ROBERT J. WELCH, M.R.I.A., a past president. The various reports submitted to the meeting showed that, although there had been some diminution in membership, the Club continues to do valuable work, and that during the past year the energies of its members had resulted in the recording of much useful information in regard to the fauna and flora of Ireland. The Librarian's report dealt with the usual exchanges of proceedings with kindred societies and with the cataloguing of the Club's library. The Prize Sub-Committee announced the award of prizes to two junior members, Miss Annette B. Foster and E. W. McClelland, for essays descriptive of any meeting of the junior section held during the year, both these essays dealing with an excursion to Belvoir Park in May last. The report of the Treasurer (N. H. Foster) showed that the financial position of the Club had been improved, and that there was a balance in hand. On the motion of the Chairman, seconded by W. J. Fennell, F.R.I.B.A., the reports were unanimously adopted.

The following office-bearers were elected for the year 1915-16:—President, R. LI. Praeger, B.A., B.E., M.R.I.A.; Vice-President, Captain A. R. Derryhouse, D.Sc., F.G.S., M.R.I.A.; Treasurer, Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U.; Librarian, Sylvanus Wear; Sectional Secretaries:—Botanical, N. Carrothers; Geological, Miss E. L. Andrews; Zoological, C. G. Robertson; Archæological, Robert May; Junior, J. A. S. Stendall. To fill the places of those retiring by seniority under rule 6 Miss S. Blackwood, R. J. Welch, M.R.I.A., and Professor Yapp, M.A., were elected members of Committee. Pursuant to notice given, J. A. S. Stendall moved, and A. W. Stelfox, M.R.I.A., seconded—"That the entrance fee of 5s. be abolished, and that rule 3 be amended accordingly." The motion was not carried.

DUBLIN NATURALISTS' FIELD CLUB.

DECEMBER 8.—The President (N. COLGAN, M.R.I.A.) in the Chair. Nominations were received of Officers and Committee for 1915. Three new members were elected. PROFESSOR BAYLEY BUTLER delivered an address on "Graft Hybrids and Vegetable Chimaeras," showing by lantern slide illustrations the results of many experiments in the production of graft hybrids by buds, chiefly as between the Tomato and *Solanum nigrum*.

The President, PROF. HENRY, Miss WEST, and W. F. GUNN took part in the discussion that followed. The results of some experiments in measuring the force exerted by expanding seeds were also shown by the lecturer.

JANUARY 12.—ANNUAL GENERAL MEETING.—The President in the Chair. The Hon. Secretary read the Report for 1914, which showed considerable activity on the part of the Club. R. LI. PRAEGER delivered an address, "Some Notes on Dispersal in relation to the Irish Flora," in the course of which he showed that there was practically no ground for believing that Ireland could be indebted for any of the rarer and more remarkable plants in her flora to the transporting agencies of water, wind, or birds. The President, PROF. CARPENTER, PROF. HENRY, A. C. FORBES, and H. W. D. DUNLOP took part in discussing various points raised in the lecture.

FEBRUARY 9.—The Vice-President (Prof. CARPENTER) in the Chair. Mr. A. E. MOERAN gave a lecture on "Irish Woods, considered from the point of view of some of their Furred and Feathered Inhabitants." Many beautiful views of forest scenery were shown on the screen, and the forms of animal life met with in Irish woods were well and amusingly described. PROF. HENRY and Messrs. O'BYRNE, BARRINGTON, DUNLOP, with the Chairman, took part in the discussion, and a vote of thanks to the Lecturer was unanimously passed.

MARCH 9.—The President in the Chair. The programme consisted of a series of exhibits, each exhibitor giving an account of the object shown, which in most cases gave rise to some discussion. R. M. BARRINGTON showed some birds from lighthouses, various objects of interest from St. Kilda, and specimens of the extinct Large Copper Butterfly (*Chrysophanus dispar*). T. R. HEWITT (in absence of the Vice-President) showed stages in the larval history of the Warble Fly (*Hypoderma*), with an account of recent additions to knowledge on this subject. The President showed microscopic slides illustrating the dermal plates of some Irish Holothurians. W. F. GUNN showed a microscopic exhibit of celery disease, J. N. HALBERT a rare hemipterous insect (*Aphelochirus aestivalis*) taken in Co. Dublin, PROF. HENRY some cones and sprays of various exotic pines grown in England, R. LI. PRAEGER specimens illustrating the problem of the Lough Neagh flora, Mrs. LONG a number of photographs of Australian plants, and Mrs. W. B. WRIGHT a series of Crustaceans of the Carboniferous Period, which she has lately been engaged in investigating with deeply interesting results. One new member was elected.

MARCH 13.—EXCURSION TO THE ZOOLOGICAL GARDENS.—About thirty members took part in this excursion, which was conducted by the Vice-President, with the assistance of Dr. Ferrar, who contributed a demonstration at the Fish Hatchery. The new arrivals at the Antelope House (Brindled Gnu and Eland) and the Hoolock Gibbon excited special attention. Tea was provided in the Haughton House at 4 o'clock, after which, as the formal proceedings were considered over, the party broke up into groups and explored the Gardens according to the taste of each section.

APRIL 10.—EXCURSION TO GORMANSTOWN AND BALBRIGGAN.—Rather unfavourable weather diminished the attendance at this excursion to

ten, inclusive of the two conductors, J. de W. HINCH and G. R. HUMPHREYS. Leaving Amiens Street at two o'clock for Gormanstown, the party walked from the latter station along the sea-shore to Balbriggan, their attention being called on the way to the remarkable series of dykes of diorite and basalt traversing the sedimentary Ordovician rocks. Bird-life was somewhat disappointingly scarce. After about two hours walking Balbriggan was reached in time for tea before catching the 5.48 train home.

NOTES.

ZOOLOGY.

A Cystidean from Co. Tyrone.

Dr. F. A. Bather, F.R.S., has recently redescribed *Pleurocystis anglica*, a Cystidean species founded by O. Jaekel in 1899. Jaekel believed that his specimen came from Scotland or S. Wales; but Bather (*Trans. R. Soc. Edinburgh*, vol. xlix., p. 475) concludes that its true habitat is the Ashgillian Beds of Bardahessiagh, near Pomeroy, in the county of Tyrone. The two "syntypes" of the species, which have been personally examined by Bather, are in the collections of the Vetenskapsakademi in Stockholm; but the counterpart of one of them, doubtless from the Portlock Collection, is in the Museum of Practical Geology in London, and its locality is recorded as Bardahessiagh. Since Bather's paper is entitled "Caradocian Cystidea from Girvan," it is well to call attention to the inclusion in it of this interesting correlation of three Irish specimens. How the better half of the example originally found by an Irish Surveyor made its way to Stockholm is one of those mysteries that hang round all collections.

Introduced Reptiles on Lambay.

I was surprised to learn from Mr. Baring's article in the April number of the *Irish Naturalist* (p. 68) that over 2,000 reptiles and amphibians had been turned out on Lambay. Although I am not favourably disposed towards introductions as a rule, it must be admitted that these trials on Lambay are of quite a special nature. The experiment will certainly be watched with interest. That the Green Lizard and Wall Lizard have survived the dampness of the climate during successive winters is remarkable. The cold alone does not seem to affect them much, but I doubt whether they will breed on the island. Some of the amphibians, on the other hand, ought to do well and breed. The Salamanders and Newts are all hardy and the larvae require very little water. The Toads, too, should breed, notably *Bufo calamita*. But why should the latter be imported from Scotland when it can be obtained plentifully in the south-west of Ireland? In answer to Mr. Baring's query whether tortoises have ever been known to breed in the British Islands in the wild state, I believe they have done so occasionally, and I can see no reason why

Emmys orbicularis, for example, should not breed on Lambay. I am afraid some of the tortoises mentioned by Mr. Baring cannot succeed. *Chrysemmis picta* requires plenty of water and does not seem to be able to swallow its food on land. On the other hand, *Cistudo carolina* (the Box Tortoise) ought to do well. It is hardy and fond of roaming about in search of slugs and insects. It even takes to blackberries and other fruits and lives to a good old age. Two other species might be well worth a trial. The Diamond-back Terrapin (*Malacoclemmys palustris* or *terrapen*) might do in the harbour, as it lives in North America in salt marshes. It feeds on mollusks and crabs and is very highly estimated as an article of diet. *Chelopus insculptus* may succeed, as it is quite terrestrial, living on tender vegetation and insects. A few small weedy ponds, however, ought to be established on the island.

R. F. SCHARFF.

National Museum.

Fulmars on the Skelligs.

Mr. P. J. McGinley, lightkeeper at the Skelligs, writes that the colony of Fulmars there this year amounts to about 100 birds. It will be remembered (*Irish Naturalist*, June, 1914, p. 133) that in 1913, when first noticed, the colony consisted of only eleven or twelve pairs—last year there were about seventy birds, so their numbers are rapidly increasing, and I anticipate that this northern species will in ten or twelve years be found on most of the suitable cliffs on the west coast of Ireland.

RICHD. M. BARRINGTON.

Fassaroe, Bray.

The Carrion Crow in Ireland.

As some doubt has been cast on the statement of Mr. Mason (*Irish Naturalist*, 1913, p. 83) on the occurrence of the Carrion Crow on Lambay, it may interest ornithologists to know that I saw a bird and heard the unmistakeable call of this species at the North Slob, Wexford, on February 15th this year. The bird passed within one hundred yards of where I was standing; it was the call of the Carrion Crow, quite unlike that of the Rook to anyone who is familiar with both species, which drew my attention to the bird.

W. J. WILLIAMS.

Dublin.

The Tree-Pipit—A Correction.

May I be permitted to point out a mistake which I see in the note entitled "Irish and British Birds," which appeared in last month's issue of the *Irish Naturalist* (*supra*, p. 75). "Tree-Pipit" should have been printed instead of "Tree-Sparrow."

C. J. PATTEN.

The University, Sheffield.

REVIEWS.

THE NEW B.O.U. LIST.

A List of British Birds. Compiled by a COMMITTEE OF THE BRITISH ORNITHOLOGISTS' UNION. Second and Revised Edition. London: W. Wesley & Sons, 1915. Pp. xxii + 430. Price 7s. 6d.

Thirty-two years have elapsed since the publication of the first edition of the B. O. U. List of British Birds, and so many important ornithological works have been published in that interval by writers who were not inclined to subordinate their own views on correct nomenclature to what they regarded as antiquated usage that something extremely like anarchy has lately come to prevail on the subject for want of a recognized standard. The new List may fairly claim to be the work of the most authoritative Committee that could have been obtained, and it appears to have faithfully carried out its task in accordance with the important series of resolutions (five in number) which it passed at its first meeting on the 8th November, 1911. By these the tenth edition of Linné's "*Systema Naturæ*" was accepted as the basis of priority, with certain reservations intended to guard against the extreme confusion that must result from either the alteration or the transference of a name that has been in use for many years. Trinomial names were to be accepted for "races recognized by the Committee as occurring in the British Isles"—though this was afterwards interpreted as meaning for races distinct from the typical form, which was not to be trinomially designated—and names whose retention was decided on as advisable in spite of their not having the sanction of the strict law of priority were to be specially indicated as "*nomina conservanda*." It is unnecessary to say that these reservations mark a large departure in the new List from the principle followed by the "Hand-List of British Birds" published in 1912, under the joint authorship of Messrs. E. Hartert, F. C. R. Jourdain, N. F. Ticehurst, and H. F. Witherby.

It cannot be denied that the "compromise" plan here followed between usage and the strict rule of priority will in some ways rather tend to increase the existing confusion. If, for example, we take the name *Turdus musicus*, without adding a trinomial, we find ourselves capable of being understood in three different ways. Under the old B. O. U. list *Turdus musicus* was the Song-Thrush. The Hand-List of 1912 following the strict priority rule, transferred it to the Redwing. In the new B. O. U. list that change is disallowed as too confusing, and *Turdus musicus* again becomes the specific name of the Song-Thrush, but we are discouraged from using the binomial name for the aggregate species, and are warned that it ought to be understood as meaning only the Continental form, while the British Song-Thrush (the *Turdus philomelos clarkei* of Hartert's Hand-List) is the *T. musicus clarkii* of the B. O. U. List of 1915. So the same systematic name may be variously used either for the Song-Thrush

(aggregate), the Continental (as distinct from the British) Song-Thrush, or the Redwing.

The total number of trinomials is, of course, very largely reduced by the refusal to adopt them for the typical form—a refusal that rids us of the unwelcome rush of self-echoing names like *Pica pica pica* and *Coccothraustes coccothraustes* that came on us like a deluge in the Hartert Hand-List. In other ways, too, the number of trinomials is much diminished. The Committee have not recognised as valid all the subspecific distinctions conferred by Mr. Hartert on British forms of wide-spread birds. The Nuthatch, Goldcrest, Stonechat, Hedge-sparrow, Lesser Spotted Woodpecker and Green Woodpecker of the Britannic area are cases in which such recognition is refused, and these birds, accordingly, have binomial instead of trinomial names. In other cases the trinomial has been escaped by an opposite process, *i.e.*, by recognising as a full species a British bird to which Mr. Hartert accorded only subspecific rank, such as the Pied Wagtail (which he had considered a sub-species of *Motacilla alba*) and the Yellow Wagtail, retained as *M. raii* in the present List, though in the Hand-List it figured as only sub-specifically distinct from the Blue-headed Wagtail under the title *M. flava rayi*. The Scandinavian or true Gyr-Falcon is also here regarded as a full species, *Hierofalco gyrfalco*, though the Iceland and Greenland Falcons are only subspecifically distinguished from each other as *H. islandus* and *H. islandus candicans*. The Hand-List made all three of them forms of one species, *Falco rusticolus*.

Irish naturalists are not deprived of the satisfaction that they derived from the recognition by Messrs. Hartert and Ogilvie-Grant of distinct Irish forms of the Jay, Coal-Titmouse, and Dipper. On the other hand, it is rather startling to find that the Parrot Crossbill, which both in the British Bird-Book (Appendix, p. 467) and in the Hand-List of 1912 was treated as a "full species" under the name *Loxia pityopsittacus*, is pronounced by the B. O. U. Committee to be undeserving of even subspecific rank. We are evidently as far from agreement as to the amount of distinction that constitutes a sub-species as we are as to where the line should be drawn in sacrificing long-established names on the altar of a theoretical but absolutely unobtainable uniformity of language.

In the matter of classification the Committee have decided on following Dr. Sharpe's "Hand-List of Birds," though reversing the sequence so as to substitute a descending rather than an ascending order. Even with this modification, the arrangement will be to most British and to nearly all Irish bird-students an extremely unfamiliar one. We are now confronted with the fact that four such important and authoritative publications on British Birds as the late Howard Saunders's Manual, Kirkman's "British Bird-Book," the "Hand-List" of E. Hartert and his three colleagues, and (not least) the newest List produced by the British Ornithologists' Union—all four issued within the past sixteen years—follow four different systems of classification, the number of recognised Orders varying between eleven in Kirkman's "Bird-Book," and twenty-one in the present B. O. U. List. It is hardly surprising that the late Professor Newton should have decided on bringing out his

magnum opus in the form of a "Dictionary," in despair of the possibility of any better arrangement than the alphabetical one being attainable in the present state of ornithological knowledge.

One hundred and forty-nine birds that have straggled to these islands on occasions numbering less than twenty for each species are included in the List as "rare visitors." Those of special interest for Ireland are the Greenland Redpoll, Eastern Sky-Lark (*Alauda arvensis cinerascens*), Crested Lark (whose supposed Irish occurrence is considered doubtful), Short-toed Lark, Rufous Warbler, Pallas's Grasshopper-Warbler, Melodious Warbler, Great Spotted Cuckoo, Yellow-billed Cuckoo, Black-billed Cuckoo (the place of whose only occurrence in the British Isles—Killead, Co. Antrim—is wrongly named Kilbead), Griffon Vulture, Spotted Eagle, Lesser Kestrel, Greater Snow-Goose (*Chen hyperboreus nivalis*), Hooded Merganser, Collared Pratincole (Irish occurrence counted doubtful), Bonaparte's Sandpiper (ditto), Buff-Breasted Sandpiper, Bartram's Sandpiper, Spotted Sandpiper, Eskimo Curlew, American Golden Plover, Sociable Plover, Bonaparte's Gull, White-winged Black Tern, Wilson's Petrel, and Cape Pigeon—the last being included with a doubt which Irish naturalists will regard as somewhat more than justified.

Reported stragglers which are not held entitled to a place in the List are relegated to an Appendix, in which will be found such a miscellaneous gathering as the American Goldfinch shot in Achill in 1894, the Slate-coloured Junco killed at Loop Head in 1905, and the well-known Irish records of the American Robin, Blue Rock-Thrush, Cape Bulbul, Purple Martin, Belted Kingfisher, American Goshawk, Black-winged Kite, Canadian Crane, Swift Tern, and Noddy. Several of these have long been refused even bracketed mention in Irish lists, an error in one case, and a trick in another, having been plainly acknowledged. It was, therefore, carrying the right of arbitrary exclusion to excess—unless, indeed, an oversight has occurred—to ignore altogether, both in the main List and in the Appendix—the case of the Sheathbill (*Chionis alba*) shot on Carlingford Lough on December 2nd, 1892. Whatever the true history of this bird, its occurrence in good plumage on the Down coast was at least of equal interest with that of the American Goldfinch—in frayed plumage—on Achill Island, to which Mr. Ussher thought it undesirable (perhaps wrongly) to make any reference in his "List of Irish Birds."

There are a few points in which the references to Irish ornithology are slightly misleading, and in this connection I would like to mention my indebtedness to Mr. Nevin H. Foster for having drawn my attention to several statements that call for comment. One is the reference to Redstart breeding in this country "in Cos. Wicklow and Tyrone." It is to be feared that this is a statement of very doubtful accuracy at present as regards either county. At any rate, Mr. Foster assures me that the birds have not been seen in their Tyrone breeding place for several years, and I have it from another informant who made careful local inquiries on the matter that the once well-known Wicklow breeding-station has been equally neglected.

Again, the statement that the Tawny Owl "has been introduced into Ireland" would seem to suggest that some survivors of the introduction (perpetrated in the year 1900) in Co. Down, which give rise to some correspondence in this journal in 1901, are still in existence. But as four of the six introduced birds are known to have been shot, and Mr. Foster tells me that nothing has since been heard of the rest, it may fairly be assumed that this would be a mistake.

Of the House-Martin—now to be known under the strange name of *Delichon urbica*—we are told that it is less widely distributed (than in England) "in Ireland and the Highlands of Scotland, and rare there as a nesting-species." The language is ambiguous, as the word "there" may possibly be meant to cover only the Highlands of Scotland, though most readers would take it as including Ireland also. The House-Martin, however, cannot fairly be called "rare" as a breeding species in this country. It is far less numerous than in England, and—though nesting in every county—is often absent over considerable stretches of seemingly suitable ground. This, however, might also be said of the Sparrow—which the List—not quite accurately—describes as "almost universally distributed where there are habitations."

On the subject of the Irish Coal Titmice, Mr. Foster's experience in Co. Down is not in accordance with the opinion suggested on p. 56, that all our breeding birds are of the form *hibernicus*. He considers that most of the Down specimens are indistinguishable from *P. ater britannicus*. Possibly closer examination might tend to show that they are an intermediate form, but it seems undesirable that too many should be killed to elucidate the point. On the whole, the subject of Irish birds has been well and carefully handled, and it may have been advisedly that at least one interesting case of the recent nidification of a rare breeding-bird in this country has been left without mention. The Quail was certainly common in Ireland up to a considerably later date than 1850, and Mr. Foster says it continued so to his knowledge up to the early seventies in Down, Antrim, and Tyrone; but other local records with regard to the decline of this species seem hopelessly confusing.

C. B. M.

POPULAR BOTANY.

All about Leaves. By the late F. G. HEATH. London: Williams and Norgate. Pp. x. +228. With 4 coloured plates and 81 half-tone illustrations. Price 4s. 6d. net.

This little book is divided into two parts. Part I. consists of six introductory chapters dealing with the Beauty, Mystery, Knowledge and Ignorance of the subject, and with the bud and the external fabric of the leaf. Part II. contains descriptive accounts of the leaves (and in many cases of other organs) of some sixty-three kinds of plants arranged alphabetically under their common names.

The nature of much of the descriptive writing may be judged from the following extract:—"We are indeed lost in admiration of the power with

which these simple and modest-looking violet leaves are charged. Through them the mandate must go—with the creative sap they supply—to order the long foot-stalk of the blossom, the curving of its apex, the modest droop of the flower, the fascination of its scent; and in its companions and relatives, the pansy or heartsease, in the same way through the leaves of these must go the rich material, that with the aid of the great orb of day, fashions the gorgeous colours which appeal with overwhelming force to our eyes.”

To the more or less sentimental nature-lover the book will certainly appeal, but to a present-day botanist it will undoubtedly appear somewhat old-fashioned and, in parts, even unsound, as for example when, by somewhat doubtful reasoning, the author convinces himself at least that the *cladodes* (or modified branches) of the Butcher's Broom are leaves. Nor, is it to be feared, is the perusal of the book calculated to stimulate an attitude of enquiry in the mind of the reader, for the author is too apt to be “standing on the brink of an apparently unfathomable abyss gazing out into what is nearly opaque darkness!” and, naturally, reluctant to proceed further.

The book is illustrated with eighty photographs from nature in addition to four coloured plates from drawings made by Miss Schroedber, and many of these are excellent reproductions.

G. H. P.

NEWS GLEANINGS.

The Belfast Natural History and Philosophical Society's Prize and Research Fund.

This Society offers a prize of £50 for an original monograph on any botanical, zoological or palaeontological subject, to be competed for by non-professional workers in Ulster. Monographs, which must be sent to the Secretary by 1st November, will become the Society's property. A fund of £50 also is at the disposal of the Society for making grants in aid of scientific research by Ulster residents. J. M. Finnegan, the Society's Secretary, of Kelvin House, Adelaide Park, Belfast, will afford further information with regard to these important announcements.

Irish Naturalists in the Army.

Among those who have been given commissions in connection with the present call to national service are Prof. Gregg Wilson and Dr. A. Derryhouse of Queen's University, Belfast; Prof. H. A. Cummins of University College, Cork; C. M. Selbie of the National Museum, Dublin; G. P. Farran and A. B. Hillas of the Fisheries Office; H. T. Kennedy and R. L. Valentine of the Geological Survey.

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BRAMA LONGIPINNIS.

THE LONG-FINNED BREAM

(BRAMA LONGIPINNIS, LOWE).

AN ADDITION TO THE BRITANNIC FAUNA.

BY R. F. SCHARFF, B.SC., F.L.S.

(PLATE I.)

On the 18th of May last year while a fisherman off the west coast of Valencia Island, Co. Kerry, lifted his lobster-pots, he noticed a large fish swimming on the surface of the sea near by. He promptly gaffed it and dragged it into his boat. When he landed on the island he showed his prize to Miss M. J. Delap, whose skill and judgment in zoological matters is well known in Valencia. She at once proclaimed the fish to be something quite peculiar and secured the specimen, which she dispatched to the National Museum of Ireland.

On the arrival of the fish in Dublin it was examined by Miss J. Stephens, who pronounced it to be new to the Irish fauna. It was evidently a Bream allied to Ray's Bream, and it seemed to agree best with the description given by Lowe (*Proc. Zool. Soc. London*, 1843) of a fish taken near Madeira. Lowe named this fish *Brama longipinnis*, and most of his type specimens were deposited in the British Museum. Miss Stephens thought it desirable to compare the Irish specimen with the type in order to make sure of the correct identification. With the Department's sanction, I recently paid a visit to the British Museum, and seized the opportunity of taking the Bream to London.

Mr. Regan, whom I consulted, informed me that unfortunately the type from Madeira does not exist any more, not being among the Lowe collection which was deposited in the British Museum. On the other hand, Mr. Regan showed me the type specimen of Johnson's *Brama princeps*,

with which our Irish fish agrees in the most essential characters. In fact, Mr. Regan expressed the opinion, with which I concur, that *Brama princeps* and *Brama longipinnis* cannot be readily separated from one another, and that the latter term ought to be applied to the Irish specimen. Miss Stephens' original identification of the Valencia fish should, therefore, be taken as correct.

As will be noticed from the accompanying photograph, which was kindly taken for me by Mr. A. McGoogan, this bream is especially characterised by its elongated dorsal and anal fins. The dorsal fin arises behind the direct line above the insertion of the pectoral. The front of the anal fin lies about the middle of the body. The body is compressed from side to side, the cleft of the mouth being oblique, with the lower jaw slightly projecting. The scales near the forked tail are provided with a tiny hook. When the fish was caught it was brilliantly coloured, according to the fisherman's description. At the time of its arrival on the island it had already lost that brilliancy of tint, as so many fishes do. It was almost uniformly grey.

Our specimen measures 20 inches (50 centimetres) in length from the snout to the fork of the tail. The height of the body in a vertical line from the anterior base of the dorsal fin amounts to $9\frac{1}{2}$ inches (23.2 cm.). The fish weighed seven and a quarter pounds.

The genus *Brama*, to which the Long-finned Bream belongs, occurs in the Atlantic, Pacific, and Indian Oceans, and two species are now known from the Irish marine area. Ray's Bream (*Brama Raii*) was first recorded in the year 1888, and still remains one of our great rarities. The Long-finned Bream, as already stated, was first obtained near Madeira, and this record is the first for the Britannic marine area. One specimen has since been captured off the north coast of Norway, while another was washed ashore on Iceland.

NOTES ON IRISH SHARKS.

BY R. F. SCHARFF, B.SC., F.Z.S.

I.—THE BASKING SHARK (*Cetorhinus maximus*).

The Basking Shark, or Sun-fish, as it is sometimes called, on account of its remaining motionless for a long time on the surface of the water, is almost too common a species to be recorded. Not long ago great numbers of them were harpooned off the west coast of Ireland in order to obtain the oil contained in the liver of these sharks. The oil is rather valuable, and one of the Basking Sharks yielded over a hundred gallons of it, which was worth from £50 to £100. This fishery has now been abandoned as the fish have become less abundant. But they are by no means rare, and I have a note received from Mr. J. Keane, of Youghal, that two Basking Sharks measuring $22\frac{1}{2}$ and $23\frac{1}{2}$ feet in length were taken in salmon drift-nets towards the end of May in 1912.

II.—THE SIX-GILLED SHARK (*Hexanchus griseus*, Rafin.).

Until a few years ago no specimen of this Shark was known from the Irish marine area. In September, 1912, Mr. W. Bindon Scott captured the first undoubted example of this great shark near Dugort, Achill Island, on an ordinary cod line. It measured 9 feet 4 inches in length, its weight being estimated at from 3 to 5 cwt. Unfortunately this fish was not preserved, but it was identified by Mr. Scott, and to judge from a photograph he sent me the identification is perfectly accurate. During the following May another specimen was secured at the mouth of Kenmare River and presented to the National Museum of Ireland by the Earl of Dunraven. This shark measured 7 feet 4 inches. Finally a very young example was procured during the Fisheries' Survey of the Department's steamer in 110 fathoms, near the Bull Rock on the Kerry coast.

The Six-gilled Shark is not only of interest because it is new to the Irish fauna, it belongs to a group of sharks

which retains certain archaic characters found only in the remains of fishes from older geological deposits. It is essentially a Mediterranean species. It may be extending its range northward, or the incursion into the Atlantic of this voracious fish may be only in the nature of a temporary raid. The snout is rounded, the eyes large, and there are six gill slits at the side of the head instead of the usual five. It grows to a length of about 30 feet, and was once recorded from Scotland and several times from the south of England.

III.—CENTROPHORUS AND SCYMNODON—TWO DEEP-SEA GENERA OF SHARKS IN IRISH WATERS.

The genus *Centrophorus* includes small sharks allied to the Piked Dog-fish, and was first recorded from the Britannic area by Holt and Calderwood in 1895.¹ These peculiarly deep-sea sharks had previously only been known from the coast of Portugal and Japan. A regular deep-sea shark fishery exists in Portugal, the skin being used for polishing wood. The species recorded (*Centrophorus squamosus*) was taken on a long line at a depth of 250 fathoms, off the coast of Mayo. Some years later Mr. Holt secured a second specimen near the Bull Rock in Kerry in 110 fathoms of water, which is now in our National Museum; while no less than nine were taken by Dr. Schmidt, of Copenhagen, on a long line off the west coast of Ireland. I am now informed by Prof. Jensen, of Copenhagen, that Dr. Schmidt secured also a single specimen of *Centrophorus calceus* off the west coast of Ireland. These species had previously been known from the seas of Portugal. A specimen of the allied genus *Scymnodon* was secured by Mr. Holt, off the Tearaght Rock, in between 215-515 fathoms of water, and identified by him as *Scymnodon ringens*, Bocage, which, like *Centrophorus*, was known from the seas of Portugal.

¹ HOLT AND CALDERWOOD, Survey of Fishing-grounds, W. Coast of Ireland, 1890-91, *Trans. R.D.S.* (2), vol. v., 1895.

NATURAL HISTORY NOTES FROM CARLINGFORD,
CO. LOUTH.

BY NEVIN H. FOSTER, F.L.S., M.R.I.A.

Having spent a few days—Saturday till Tuesday—at Easter of this year at Carlingford, and obtained several invertebrates hitherto unrecorded from Co. Louth, it has been thought advisable to publish these as a contribution to our knowledge of the fauna of this county. With the exception of noting the Birds seen—and for this the prevailing weather, cold and stormy, was not favourable—my attention was confined to searching for Terrestrial Isopods (Woodlice), Myriopods (Centipedes and Millepedes), and among the Arachnids for Spiders and Harvestmen. I also searched for Pseudo-scorpions, but failed to find a specimen of this group. I have to tender my thanks to Mr. D. R. Pack Beresford, who kindly identified the Spiders and Harvestmen, and to Dr. A. Randell Jackson and Mr. R. S. Bagnall for their assistance in naming the Myriopods collected. It should be noted that all the observations and collections were made within a one mile radius from the town of Carlingford.

AVES.

During the four days 35 species of Birds were seen, the most interesting perhaps being a Diver, in immature plumage, probably the Red-throated Diver, *Colymbus septentrionalis* Linn., which was watched for nearly an hour on Sunday afternoon as it fished in the bay. It was noted that this bird travelled for long distances under water, and it was only occasionally that it came sufficiently near to the shore to enable me to see it clearly. The Chiffchaff, *Phylloscopus rufus* (Bechstein), was seen and heard on 5th April, five days earlier than I subsequently noted its arrival at Hillsborough.

ISOPODA TERRESTRIA.

Ten species of Woodlice had been recorded from Co. Louth, and of these two—*Porcellio dilalatus* and *P. laevis*—were not seen at Carlingford. My list, however, contains ten species, of which two—*Trichoniscus roseus* and *Haplophthalmus Mengii*—are new to the fauna of the county. I had hoped to find *Trichoniscoides albidus* and *Cylisticus convexus*, but these species still await discovery in Louth.

Ligia oceanica (Linn.).—The shore at Carlingford, being in the main of a sandy nature, does not afford a suitable habitat for this species, and it is not therefore surprising that only one specimen was seen. It is evidently not numerous here, as I recollect on a previous occasion searching for upwards of an hour for this species before succeeding in finding a specimen.

Trichoniscus pusillus Brandt.—As obtains everywhere else in Ireland, this species proved very common in damp situations. It was found in every place where there was sufficient moisture.

***T. roseus** (Koch).—This species existed in considerable numbers on and about a large rubbish-heap by the side of the tennis court in front of the hotel. As the situation was artificial, it is possible that it may have been imported, but of this no evidence could be detected. In my experience this species has always been found in dry situations, i.e., among cinders, etc., and the heap in question doubtless afforded a congenial habitat.

T. pygmaeus G. O. Sars.—It is extremely probable that this little species is common all over Ireland, for in every county, with the exception of Mayo W., where search for it has been prosecuted it has been found. In my experience it is not so readily discovered between April and October as in the colder months, and this factor may account for the failure to find it in West Mayo, where visits were paid in the late spring or summer. At Carlingford it was noted in small numbers in various places.

***Haplophthalmus Mengii** (Zaddach).—So far as our present knowledge points, this species appears to be not uncommon, mainly in the vicinity of the coast, and is generally found under deeply-imbedded stones. At Carlingford four specimens were found, and it did not appear to be numerous. Mr. A. W. Stelfox tells me that in Drumbo Glen, Co. Down, he frequently turned over suitable stones and found it in small numbers, but that on repeating the search late in the evening it proved abundant; and he suggests that during the day it may burrow in the ground and only approach the surface at the coming of night. In Ballynamona Wood, on the shore of Lough Gill, Co. Sligo, I found this species exceedingly numerous just previous to nightfall, and looking in the same place during the forenoon I did not find a single specimen.

Philoscia muscorum (Scopoli).—This species proved common everywhere. Most of the specimens were of the typical brown colour with more

or less pronounced yellow markings, but bright and dull yellow specimens were not uncommon, and a few red-coloured specimens were noted.

Oniscus asellus Linn.—Extremely common everywhere. Numerous specimens of the “butter-scotch” variety were seen.

Porcellio scaber Latreille.—Very common, but not so numerous as the preceding species except in situations a little above high-tide mark, where large colonies existed entirely composed of this species.

P. pictus Brandt.—Only one specimen of this species was noted, at the base of King John’s Castle, where it had previously been obtained.

Armadillidium vulgare Latreille.—With the exception of *Oniscus asellus*, probably the most numerous Woodlouse in the neighbourhood of Carlingford. An estimate of some of the large communal colonies would probably yield the following proportion—*Ph. muscorum* 6, *O. asellus* 60, *P. scaber* 20, and *A. vulgare* 40; and if the situation were sufficiently damp perhaps *T. pusillus* 20 and *T. pygmaeus* 3 or 4 would be included.

ARANEIDA.

Mr. D. R. Pack Beresford has given me the following list of the Spiders collected at Carlingford:—

- | | |
|---|------------------------------------|
| * <i>Amaurobius fenestralis</i> Stroem. | * <i>Walckenaera acuminata</i> Bl. |
| * <i>Lycosa ruricola</i> de G. | <i>Textrix denticulata</i> Oliv. |
| * <i>Stemonyphantes lineata</i> Linn. | <i>Bathypantes concolor</i> Wid. |
| * <i>Harpactes Hombergii</i> Scop. | <i>Drassus lapidosus</i> Koch. |
| <i>Pachygnatha de Geeri</i> Sund. | |

PHALANGIDEA.

Only two species of Harvestmen were obtained:—

- | | |
|---------------------------------|----------------------------------|
| <i>Nemastoma lugubre</i> O.F.M. | <i>Platybunus corniger</i> Herm. |
|---------------------------------|----------------------------------|

CHILOPODA.

Six species of Centipedes were obtained, and it is strange that *Lithobius variegatus* Leach—a species apparently elsewhere common in Ireland—was not seen at Carlingford.

- **Lithobius forficatus* (Linn.).
- **L. crassipes* L. Koch.—This species had only been previously recorded from three Irish counties.
- **L. glabratus* C. L. Koch (= *L. melanops*, Newport).
- Geophilus longicornis* Leach (= *G. flavus*, de Geer.).
- **G. proximus* C. L. Koch.
- **G. truncorum* Meinert.

DIPLOPODA.

The millepede collections also yielded six species. It may be that the plantations here, consisting as they do mostly of conifers (principally Larch), do not harbour so rich and varied a Millepede fauna as would be the case in plantations of deciduous trees. No specimens of Pauro-poda were found.

Iulus albipes C. L. Koch (= *I. niger* Leach).

**I. fallax* Meinert.

I. silvarum Meinert (= *I. punctatus* Leach.)

**I. pusillus* Leach.—This species has only been recorded from four Irish counties previously.

**Blaniulus guttulatus* Bosc.

* *B. fuscus* am Stein.

SYMPHYLA.

Two species of this class were taken :—

**Scutigera immaculata* (Newport).—This species had previously been taken in five Irish counties, the first recorded being that by Prof. Carpenter, from West Galway under the name *Scolopendrella immaculata*.

**S. biseutata* Bagnall.—This constitutes the first record for this species from Ireland. It has been taken in a few localities in the north of England and in Scotland, and is unknown elsewhere. The specimen has been deposited in the National Museum, Dublin.

In the above lists * prefixed to a species denotes a new county record.

The finding of a few plants of *Asplenium marinum* at Carlingford is the first definite record for this fern from Co. Louth.

Hillsborough, Co. Down.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a pair of Rabbits from Mrs. Herbilly, a Roseate Cockatoo from Mrs. Clancy, and a Grey Parrot from Miss Twemlow.

¹ *Irish Nat.*, vol. iv., p. 256.

DUBLIN MICROSCOPICAL CLUB.

MAY 12.—The Club met at Leinster House, D. M'ARDLE (President) in the chair. The officers for 1915-16 were elected:—President, D. M'ARDLE; Vice-President, N. COLGAN, M.R.I.A.; Secretary, Sir Frederick Moore; Treasurer, W. N. ALLEN.

W. F. GUNN showed a type of the well known fungus *Sclerotinia sclerotiorum* which attacks the tubers of Jerusalem Artichokes (*Helianthus tuberosus*). The first sign of the presence of the fungus is the appearance of a white mycelium on the surface of the tubers which rapidly spreads from one to another, and if not detected soon permeates the contents of a whole sackful. Very shortly the large black sclerotia form here and there over the tubers, which by this time have become a soft decayed mass. These sclerotia function as resting spores, survive the winter, and in the spring of the following year, germinate and give rise to an ascomycetous form of fruit, the spores of which germinate and again start the life cycle of the fungus.

Prof. G. H. CARPENTER showed specimens of *Braula caeca*, a bee-parasite which belongs to the pupiparous division of the Diptera. The specimens, lately forwarded from Carlingford by Mr. Harvey, are the first to be recorded from any Irish locality. Possibly they may have been introduced from Italy where *Braula* is said to be abundant. The parasite is wingless and remarkable on account of its large size in proportion to that of its host.

It was decided to hold the annual excursion on June 19th, Bohernabreena and Glenasmole being chosen as the locality, but instead of having the usual club dinner in the evening to make a collection among the members for the benefit of Irish prisoners of war in Germany.

DUBLIN NATURALISTS' FIELD CLUB.

APRIL 20.—N. COLGAN (President) in the chair. Prof. G. H. CARPENTER gave a lantern lecture on "Recent Advances in Knowledge of the Life-history of Warble-flies." A historical survey of the progress of investigation into the transformations of the insects was given from the work of De Réaumur and Bracy Clark in the eighteenth century to the present day. These old-time observers had made out the principal facts with regard to the later larval and pupal stages; during recent times interest has been concentrated on the place and method of egg-laying, and the means by which the newly-hatched larva enters the ox's body—whether by the mouth or through the skin. The experiments and observations bearing on these questions which have lately been made in Ireland were described and illustrated by a set of photographic lantern slides. The main results of these enquiries were published in the *Irish Naturalist* last year (vol. xxiii., p. 214). Prof. Carpenter stated that the muzzling experiments of 1914-15 had so far fully confirmed the conclusions drawn from former years' work that there is no effective infection by way of the mouth. The President, J. N. HALBERT, and H. DUNLOP took part in the discussion.

MAY 15.—EXCURSION TO COOKSTOWN (LOWER GLENCULLEN).—Thirty-six members and visitors travelled by the 10.45 train from Westland Row to Bray, where they were met by the conductor, R. M. BARRINGTON, under whose guidance the party drove to Enniskerry, where some alighted and walked up the glen from the bridge on the western Scalp road. The remainder of the party proceeded to Glencullen bridge, and, led by the conductor, walked through the whole extent of the valley, watching Cuckoos, crossing the river several times by stepping-stones, and stopping to examine a Dipper's nest and to collect larvae of aquatic insects. The ascending section of the party was met opposite the great gravel cliff, where Prof. Carpenter described briefly the history of the valley—a deep stream cut through glacial sands and gravels. Mr. Barrington pointed out many marks of the action of the great flood of August, 1905. The whole party then wandered down to Enniskerry, the lower, well-wooded part of the glen being full of breeding birds; a nest of the Goldcrest attracted special attention. At Enniskerry bridge the vehicles were waiting, and the drive was resumed to Fassaroe, where Mr. and Mrs. Barrington most hospitably entertained the club. After inspection of the museum and the expression of hearty thanks for the kindness shown the members by Mr. Barrington and his family, the party returned to Bray and caught an evening train back to town.

NOTES.

BOTANY.

Ranunculus Auricomus in North Kerry.

When driving around Ross Island, Killarney, in the last week of April, Mrs. Jenner detected this Buttercup growing sparingly in one or two spots towards its western end. While not uncommon along the east side of Ireland, *R. Auricomus* is quite a rare and local plant in the west; it has only recently been found in Clare and Limerick, and is still unrecorded for South Kerry and West Cork. Mrs. Jenner's name is well known to readers of Mrs. Gregory's "British Violets."

REGINALD W. SCULLY.

Dundrum, Co. Dublin.

ZOOLOGY.

Hoopoe in Co. Waterford.

A fine specimen of the Hoopoe was sent for preservation to the Messrs. Rohu, the furriers and taxidermists of Cork. It was shot on the 5th of April by the head keeper of the Dromore estate, Co. Waterford.

ROBERT WARREN.

Monkstown, Co. Cork.

Jays in Co. Cork.

Mr. USSHER in "Birds of Ireland" mentions that Jays formerly inhabited the valley of the Blackwater, Co. Cork, but were exterminated there for the sake of their wing feathers, which are in great demand in the making of salmon flies. He also mentions the species as occurring irregularly in the county. A small colony appears, however, to have settled within recent years in the woods of Convamore, Ballyhooly. My informant, who was one of a shooting party there last February, saw two of the birds and heard others. The keeper told him that they came to the woods about three years ago, and that he thought there were six or eight birds there now. It will be interesting to see if they establish themselves here again, though I fear they will have need of all their proverbial wariness.

W. M. ABBOTT.

The Rectory, Fermoy.

White Wagtails in Co. Mayo.

The White Wagtails as usual made their spring visit to the island of Bartragh this season, a little flock of seven birds being observed on the 12th of May at their usual haunt, the damp flat of coarse pasture between the sandhills and the garden, and whenever a bird visits the island, it is sure to be met in that locality. Since the 29th April, 1893, when I first observed two birds on the island, obtaining a lovely male specimen (now in the collection of the National Museum, Dublin), a sharp look-out has been kept for these birds every season between the 15th of April and the first half of May, and it has been clearly and unmistakably proved, that up to the present date the White Wagtails are regular spring visitors to the island of Bartragh every season, when on their way to their northern breeding haunts, the length of their visits depending on the state of the weather. If a smart breeze of northerly or north-easterly wind is blowing, their stay is prolonged for days, up to weeks, waiting for a change of wind to the south; then if it is only a gentle breeze, they suddenly disappear. Frequently when arriving in calm weather, their stay may be only for a day, or perhaps for a few hours. The flight that passes over Bartragh on the northern journey evidently returns south by a different course, for during the 22 years' observation of these birds on Bartragh, only once were a pair observed in autumn, which shows that no southern flight passes over Bartragh. My esteemed and valued correspondent, Mr. T. H. Nelson of Redcar, Yorkshire, informs me that White Wagtails pass over the Isle of Man regularly in autumn on their way to the south, and that the flight passes the district where his friend resides, and that he has often trapped and put them in his aviary, in the hope of inducing them to breed in captivity; but what success he has had, I cannot say.

ROBERT WARREN,

Monkstown, Co. Cork,

Cetacea stranded on the Coasts of the British Islands.

About a year ago a first report on the above subject was published by Dr. S. F. Harmer, the Keeper of the Department of Zoology in the British Museum, and just now the second report has been issued. It appears that the Receivers of Wrecks were requested to send telegraphic reports to the British Museum of the stranding of any of the whale tribe. In this way it was hoped that useful information might be obtained with regard to the geographical distribution of these creatures in the Britannic marine area.

Most of the records contained in these two reports are from stations on the coasts of Great Britain. Comparatively few come from Ireland, and some of the latter have already been noted in the *Irish Naturalist*. It is of interest, however, to give a full statement of all the records of Cetacea stranded on the Irish coasts according to these two reports now issued :

- 1913 Feb. 13.—Unionhall, Cork. Bottle-nosed Whale, 26 ft.
- „ Apr. 21.—Cromane, Kerry. Ca'in Whale ? 18 ft.
- „ Aug. 9.—Inishbofin, Mayo. Rorqual, 80 ft.
- „ Oct. 5.—Cleggan, Galway. Sp. ? 6 ft. 8 in.
- „ Nov. 21.—Downings, Donegal. Dolphin, 6 ft. 7 in.
- „ Dec. 1.—Keel, Mayo. Dolphin, 6 ft 6 in.
- „ Dec. 13.—Dunaff, Donegal. Sp. ? 18 ft.
- 1914 Feb. 9.—Bannow, Wexford. Dolphin ? 6 ft.
- „ Feb. 18.—Carnsore, Wexford. Dolphin ? 4 ft. 9 in.
- „ Feb. 28.—Derrynane, Kerry. Rudolphi's Rorqual, 60 ft.
- „ Mar. 27.—Skerries, Dublin. Porpoise, 3 ft.
- „ Mar. 29.—Farribeg Bay, Clare. Porpoise, 5 ft. (without tail).
- „ June 11.—Crossconnell, Donegal. Porpoise, 2 ft. 11 in.
- „ July 24.—Ringsend, Dublin. Porpoise, 5ft. 10 in.
- „ Sept. 21.—Rosslare, Wexford. Sowerby's Whale, 11 ft. 10 in.

NEWS GLEANINGS.

Naturalists in the Army.

To the list of officers given last month (p. 96 *supra*) may be added J. Black, A.R.C.Sc., of the Avondale Forestry Station ; C. J. M'Carthy, A.R.C.Sc., from the Royal College of Science ; and T. Haigh, A.R.C.Sc., of the Geological Survey.

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CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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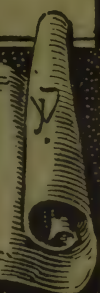
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ON THE IRISH NAMES OF BIRDS.

BY R. F. SCHARFF, B.SC., M.R.I.A.

IN the March number of the *Irish Naturalist* for this year (*supra* pp. 45-53), I published a preliminary list of the Beasts or Mammals of Ireland with their Gaelic or Irish names. I pointed out that I hoped eventually to obtain a list of many of the Irish names of animals now living in Ireland, and of those which had become extinct within historical times.

I have now completed the list of the Irish names of Birds. My list differs considerably from that contained in standard works such as Ussher and Warren's "Birds of Ireland," because I omit a good many species.

In the collection of Irish birds in our National Museum, all birds are included as Irish quite irrespective of the fact whether or no they breed in this country. Thus we find birds referred to as Irish, like the Redwing and Fieldfare, which are usually common in Ireland during certain parts of the year, but which have never made their nests or reared their young in this country. On the other hand certain species of birds are believed to have been common in Ireland long ago, and have now either entirely disappeared from this country or are included among the rare visitors. Both of these groups are included in the present list because Irish names for them are likely to exist. Most of the accidental or rare visitors which are not believed to have been more abundant in Ireland in former times are altogether excluded from my list.

I shall be most grateful to Irish scholars for any criticisms or additional names of Irish Birds. I should also like to mention that I propose to publish one or two additional papers on several groups of animals not dealt with so far, such as the Fishes, Insects and Mollusks. Any information on that subject will be thankfully acknowledged.

I am indebted particularly to Mr. L. S. Gogan and Mr. R. I. Best, for assistance and most valuable suggestions. Mr. Colgan gave me a list of the names of Birds which he

had collected in the West, while Mr. Halbert suggested to me some new sources of information.

In the list of Irish names of Birds I have placed the one first which appeared the best known and the one which might be used if necessary on a descriptive label. Several friends asked me to give the correct pronunciation of the Irish words. As many of the Irish sounds are quite peculiar this request is difficult to comply with. It would also make this article very much longer than I had intended. As a compromise I have endeavoured, with Mr. Gogan's help, to give the approximate sound in English of the first name for most of the species mentioned. The first name as it is pronounced is placed in brackets immediately after the English name, and certain symbols are used at Mr. Gogan's suggestion. For instance an inverted e "ə" is equal to the English i in the word "sir." The sound of ch is always hard as in the Scotch loch, or the German "kirche." The j is equal to the consonantal i or y (as in young). The ā is pronounced approximately as "a" in "father," or in "was," the ē as the "ee" in "meet," the ū as "oo" in "moon," and the ōw as in the English "how."

LIST OF NAMES.

(The numbers in brackets refer to the Bibliography, p. 129).

AUK.

Great Auk or Gare Fowl.

Little Auk (compare Black Guillemot).

I do not know an Irish name for either species. The Great Auk became extinct about a century ago, and there are reasons for the belief that it was abundant in Ireland in former times.

BARNACLE GOOSE (see Goose).

BARN OWL (see Owl.)

BITTERN (*bŭn-ān*)

bunnán (1), bonnán (12), bonnán buirde (6), bonán liana (6), rtearnal (6).

BLACKBIRD OR OUZEL (*lun-dhúv*).

lon dub (1), clarrac (1), ceirreac (1), lon (6), pear (6),
péars (6).

Kuno Meyer translates ceirreac by Woodlark, but this term and its variations should probably be applied to the Missel-Thrush (compare Thrush). The last two words may be the Ring Ouzel.

BLACK COCK OR BLACK GROUSE (*lāa-kjark*).

uaččearc (6), cubairc (6).

This bird no longer inhabits Ireland and we do not even possess a record of its having ever done so except that a bone from a cave in the County Waterford has been referred to it. A word corresponding to the one mentioned first, according to Forbes, occurs in the Scotch Gaelic.

BOG LARK (see Meadow Pipit).

BUNTING (*bwē-ōg* and *gjal-ūn an ghīb rōwir*).

Yellow Bunting or Yellow Hammer—buidéas (1), buidéas léana (3), buideat buide (7), buideas buairc (6). The first word is used in Waterford, the second in Clare Island, and the third in Donegal.

Corn Bunting.—gealbán an gúib iamaí (1), gealbán rsiobail (6), galún (3).

Several other Buntings have been observed in Ireland. The word galún given by Colgan is referable to the Sparrow I think.

BUZZARD (*gilm*).

gilm (6), béalbán iuaó (6), clamán (6).

None of the Buzzards breed in Ireland now, though they may have done so formerly. (Compare Eagle and Falcon).

CAPERCAILLE (*kěl-ōck kúlje*).

caiteac coille (2), cappul coille (6).

This large bird seems to have abounded in the forests when Giraldus Cambrensis visited Ireland in the 12th century, and it only died out towards the latter part of the 18th century. The last word given above is probably a corruption of cabar coille meaning "old bird of the

wood," and it is more in harmony with the current English term, while there is not much sense in "horse of the wood" which is the meaning of *cappul coille*.

CHAFFINCH (*břik-ēn bǎ-hǎ*).

břicín beačta (6).

O'Reilly translates this word by Linnet, but it evidently corresponds with the Scotch "breacan beatha" which means Chaffinch.

CHIFFCHAFF.

I am not acquainted with an Irish name.

COCK (*kěl-ōch*)

caiteac (6), *coiteac* (7).

CHOUGH (*kǎ-ōg*).

caōog (1), *cuōog* (6), *caōog* (6), *cáróg* (3) (compare Jackdaw).

This bird somewhat resembles the Jackdaw, but is easily distinguished from it by its long red bill.

COOT (*kjark-kjǎn-ín*).

cearc ceanníonn (3), ? *tuófnámairde* (4).

I suggest the second word as a possible name for Coot, although O'Reilly translates it by Diver.

CORMORANT (*brēl*).

břoióill (6), *řšaró* (6), *řic mára* (6), *munabuačille* (6), *oóaróg* (6) (young Cormorant).

The two words *tuófn* and *břuióat* are given by Ussher and Warren. The former may be equivalent to *tuóeun* which is translated as Diver or Grebe by O'Reilly, while the latter is probably another spelling for *břoióill*. According to Colgan *caiteac tuó* and *řaoiteac* are used in Clare Island. The first of these words is identified by Forbes in the Scotch Gaelic with Shag, while I cannot find the other in any vocabulary. (Compare Shag).

CORN BUNTING (see Bunting).

CRANE (*kŭr-ěsk*).? *corr iar* (6).

The Crane is believed to have been more common in Ireland formerly than at present. It is only a rare winter visitor now. The identification of the correct Irish word is rendered difficult from the fact that popularly Crane and Heron are synonymous terms, while in reality they are quite distinct species. The word *corr* is applied to all long-legged birds resembling Cranes or Herons. (Compare Heron).

CROSSBILL (*kŏm-ghŭb*).? *camaġob*.

Forbes gives *cama-ghob* for this species in Scotch Gaelic. Although I can find no equivalent Irish word, I suggest that a similar expressive term (meaning crooked bill) may be used.

CROW (*præ-æh-ār*).

Black Crow or Rook.—*préacán* (1), *príacán tuib* (3), *cnáimíac* (6).

Hooded. Scald or Royston Crow.—*fiannós* (1), *feannós* (6), *carós bán* (3), *craiteac* (6), *clunnealta* (6), *baúb* (7).

CUCKOO (*kŭæch*).*cuaé* (1), *cói* (10), *cubas* (6).CURLEW (*krŭtæch*).

crotac (1), *cruiteac* (10), *cúrlŭn* (1), *cúrlŭn* (11), *crotac mair* (6), *ġuitneac* (6). (Compare Godwit, Plover).

DIDAPPER (see Grebe).

DIPPER or WATER OUZEL (*gŏwa-dhŭv*).*ġoba tuib* (6).

This word quite corresponds with the Scotch term. The Dipper is often confounded with the Kingfisher.

DIVER or LOON (*gār-ŭg*).

ġairġ (6), *ġairġeann* (6), *ġairġere* (6), *ġairġire* (6), *laéatuir* (6), *raoié mŏr* (4).

Several kinds of birds are spoken of as Divers, but I take it that *ġairġ* and its variations as well as *raoié* apply to the Great Northern and Red-throated Divers, both

of which are well known Irish species. The last bird has sometimes been called "Rain Goose," and this term is translated by O'Reilly as *teap̃s*. The word *tačavoĩp* given above as Diver is probably some kind of Duck (perhaps the Tufted Duck).

DOTTEREL (*ōmādh-ān mōn-tich*).

amavōān mōintīc (6).

In Scotch Gaelic this word is applied to the Ringed Plover, Snipe or Dotterel, and in Ireland too the Ringed Plover is often confounded with the Dotterel.

DOVE (*kūlēm-ān*),

cotmān (10).

There are three kinds of Doves resident in Ireland, and one visitor—the Turtle Dove.

Ring-Dove, Wood-Pigeon or Wood Quest. *cotmān coille* (6), *féarān* (6), *rmurōān* (6).

According to Ussher and Warren this is called *cotum* in Connaught, and *cotūp* in Munster. Colgan states that in Clare Island the Rock Dove is known as *cotum*.

Stock Dove.—I am not acquainted with an Irish name.

Rock Dove.—*Cotum* (3).

Turtle Dove.—*féarān breac* (6), *féarān erōion* (6).

DUCK OR DRAKE (*lōchā*).

tačā (6), *šāitlēap̃c* (6), *tunnoš* (6).

No less than 25 different kinds of Ducks have been observed in Ireland. I can only identify the Irish names of three of these.

Eider Duck.—? *avoĩp* (10), *tačā ločlannač* (6).

In the "Book of Ballymote" there occurs the word *avoĩp* which Kuno Meyer identifies with some unknown bird. The only equivalent I can suggest is the Eider Duck, a bird which is at present a rare winter visitor. The Icelandic word "aedur" from which the modern word "eider" is derived agree in sound with the Irish word, and it is quite possible that this bird was formerly less rare in Ireland than it is now.

Mallard.—*tačā činn uaine* (6), *bāp̃vat* (6).

Teal.—*p̃iotčā* (6).

I cannot trace the word *ppurtača* given by Ussher and Warren.

DUNLIN.

I am not acquainted with an Irish word for this bird.

EAGLE (*ulər*).

iolap (1), *fiolap* (6), *fiolapir* (1), *iolpac* (4), *acuit* (6), *iolpa* (3), *iolap gneasac* (6), *iolap tiomcioillac* (6).

Three kinds of Eagle and a Vulture have been recorded from Ireland, as well as several large Eagle-like birds, such as Harriers, Buzzards and the Osprey. It is possible that some of the above terms may mean others than true Eagles. (Compare Falcon).

FALCON, HAWK or HARRIER (*shōw-əch*).

reabac (6), *raolcon* (6), *cubap* (10), *reōčas* (6), *reag* (7).

About half-a-dozen kinds breed in Ireland. (Compare Kite and Hobby).

Goshawk.—*meipitliún* (6). This term refers probably to the next species. Merlin.—*meirneal* (6), *meipitliún* (1). Peregrine Falcon.—*reabac* (1). Sparrow Hawk.—*ruabán* (1), *ruabán alta* (7), *ruabán alite* (4), *ppirreōs* (6), *solan gaoite* (6). Marsh Harrier.—*preácán na gcearc* (1). Dinneen translates *preácán na gcearc* by Kite or Scald Crow. Hen Harrier—(Compare Eagle). Kestrel—*fabcun* (1). I cannot find this word in any dictionary.

FIELDFARE (*shāk-ān*).

reacán (1), *rocán* (6), *uacpuitis* (6).

FLYCATCHER.

I cannot find an Irish word for this bird.

GANNET or SOLAN GOOSE (*shūlarě*).

puitaire (6), *guga* (10), *ugapóin* (3).

According to Kuno Meyer *caðan* is the Solan or Barnacle Goose, but these are two perfectly distinct birds not likely to have the same name. O'Reilly defines this word by Wild Goose or Barnacle. Kuno Meyer gives *guga* for St. Kilda Goose which is another name for Gannet. I cannot trace *ugapóin* anywhere.

GOATSUCKER. (See Nightjar).

GODWIT (*ghíl-næch*).? *guitneac* (6).

Two kinds of Godwit visit Ireland, but it is doubtful whether an Irish name exists. O'Reilly translates *guitneac* by Curlew, a bird which somewhat resembles a Godwit. I suggest that this word might have been used for the latter bird, because roid-guilbneach seems to have been used in Scotch Gaelic for Godwit.

GOLD-CRESTED WREN. (See Wren).

GOLDFINCH (*kín-jēn ōr*).*cinnín óir* (1), *dearḡán fíaoic* (6), ? *larair coille* (6).

The last word is identified by O'Reilly as the Goldfinch or Woodpecker, but these two birds are so entirely different from one another that this word may originally have been applied to quite another species. (Compare Wren).

GOOSANDER (*shíl-tiche*).*rioltaíce* (6).

As the Goosander is rather a rare visitor to Ireland, it is significant that a name should exist in Irish corresponding with a similar Scotch one.

GOOSE (*gjae*).

ḡéò (6), *ḡeao* (6), *ḡé* (6), *ḡanra* (6) (gander); *ḡannṡal* (11), (gander), *ḡuairín* (6) (gosling), *cráin* (10) (applied to the female of many animals).

Wild Goose.—*ḡéò fíaoain* (1). Barnacle Goose.—*caṡan* (1), *caṡan* (6). Brent-goose.—? *ḡeao tṡb* (6). This is rendered by O'Reilly as some kind of goose. Considering that the Brent Goose is one of our commonest and also a very darkly coloured species, the above term meaning "Black Goose," was probably applied to this bird.

White-fronted Goose.—? *ḡeao beas fionn* (6). O'Reilly translates this word by Barnacle. It seems to me, however, that this is probably a mistaken interpretation of the word. The White-fronted Goose which is the

commonest of the Irish wild geese has better claims to be called "a small white goose." Four other geese have been recorded from Ireland for which I cannot find names. The word *teap̃s* has several meanings. Among them it has been applied by O'Reilly to the "Rain goose." (See Diver).

St. Kilda Goose. (See Gannet).

GOSHAWK (See Falcon).

GREBE (*pö̃s-lē̃ä*).

par̃laḡaḡo (6), *ṡuḡ-éun* (6), *ḡallán cup̃pa* (6).

O'Reilly gives the old English word "Didapper" or "Diver" for these three words. Two well-known kinds of Grebe are resident and breed in Ireland. Three others occasionally visit this country. Only the first word agrees with the Scotch term for Grebe. (Compare Cormorant).

Little Grebe.—*ṡp̃ḡḡaṡe tuinn* (6), ? *laḡaḡoán* (4).

GREENFINCH OR GREEN LINNET (*glö̃s-ān dhār-ach*).

ḡlaḡaḡán ṡopaḡ (7).

GREENSHANK.

I am not acquainted with an Irish word for this regular winter visitor.

GROUSE (*kjärk-frē*).

ceap̃c ṡṡaṡoic̃ (1), *ceap̃c ṡṡaṡoic̃s* (3), *caileac̃ ṡuaḡo* (6), *ṡeṡceap̃c* (6).

The last word may perhaps be referable to the Black Cock. The term *ṡuiṡéaḡo* given by Colgan cannot I think be applied to the Grouse. It seems to me to be derived from *ṡuiṡḡeaḡo* meaning "sea-goose," and in Scotch the latter means "Bean-goose."

GUILLEMOT, MURRE OR WILLOCK (*f̃ṡr-ach̃a*).

ṡopaḡaḡa (3).

Black Guillemot.—*caileac̃ḡ* (6).

In Scotch this word is applied to the Little Auk, and it is quite possible that in Irish it may be used for both species.

GULL (*fuēl-an*).

ṛaoilleann (6), ṛaoilean (1), ṛaoiteóς (6), ṛeaḃlann (6).
Large Gull.—cotḃaḃ (1), cutuaḃ (1), ṛaiṛṛpeóς (6).

Twelve different kinds of gulls have been recorded from Ireland. Some of these are very scarce.

Great Black-backed Gull.—ṛaoite mór (3). Black-headed Gull. (Compare Tern).

HARRIER (see Falcon.)

HAWK (see Falcon).

HEDGE-SPARROW (see Sparrow).

HEN (*kjark*).

ceapc (6).

HERON (*kŭra-glös*).

corr ṡlar (1), corr ṛeṛeáóς (3), corrṡman (10), corr monaḃ (6).

Besides the common Heron, several other kinds of Heron occur in Ireland as rare visitors.

HOBBY (*gjär-ān*).

ṡeapṛán árḃ (6).

The same word has been applied in Scotch Gaelic to this bird which is at present a rare visitor.

JACKDAW (*kā-ig*).

cáis (1), cáes (12), cás (7), caiṛeóς (10), caḃoς (6), caḃoς (1), cáṛóς (3).

According to Ussher and Warren both caiς and caḃoς are used indiscriminately for the Jackdaw as well as Chough. But as the Chough with its red legs and bill is strikingly distinct from the Jackdaw it ought and probably had originally a separate name. All the apparently different words given above are variations of cá, representing the birds' cry. Colgan tells us that the people of Clare Island call the Chough cáṛóς which is evidently a corruption of caḃoς, while Dinneen and Kuno Meyer state that cás or cáes means Jackdaw. It might be best, therefore, to use caiς and its variations for Jackdaw, and caḃoς for Chough. (Compare Chough).

JAY (*schrae-chōg*).

rēpéacóg (6), rēpéacóg (6).

There are reasons for the belief that this bird was formerly more widely spread in Ireland, where it is now so little known that the Missel Thrush is often called "Jay." (Compare Thrush).

KESTREL (see Falcon).

KINGFISHER (*múrlach*).

múrlac (6), gobla uirge (6), bioirra (6), bioirra an t-iarḡair (6), bioirra éruirín (6), cairneac (6), iarḡaire cairneac (6).

It is possible that some of these words are really applicable to the Dipper. The last but one certainly seems to have several meanings, whereas the last word has also been used for Ostrich and Osprey in the Irish Bible. (Compare Dipper).

KITE (*aen-fín*).

eun fionn (6), éan fionn (7), clámán goblac (6), ppeacán ceirteac (6), cpmán (6), cpmán lacdan (6).

It is uncertain whether the Kite ever visits this country now. It may have done so formerly, yet it seems more likely, as stated by Ussher and Warren, that the term "Kite" is wrongly applied in Ireland to the Harrier. If their view is correct, some or all the words given above should be identified with the various kinds of Irish Harriers. (See Falcon).

KNOT.

I can find no name for this bird, which is related to the Sandpiper.

LANDRAIL (see Corncrake).

LAPWING OR GREEN PLOVER (*pīlīb-ēn*).

pīlībín (7), pīlbin (1), pīlbin (6), curracais (6), aḡaircín (6), pēreos (6), paitēreos (6).

The last word, which is more likely to mean Swallow, is rendered "Swallow or Lapwing" by O'Reilly. (Compare Turnstone and Plover).

LARK (*fwish-ōg*).

fuireóg (1), uireóg (6), laireóg (6), leaireóg (6), sluioiróg (6),
maibóg (6), maibás (6).

Although three other kinds of Lark have been recorded as Irish, only one is resident. Wood-lark.—uireóg coille (6).

LINNET (*g'ál-ūn lēn*).

sealban líon (6), sealban cpoige bpicín beata (6).

Green Linnet (see Greenfinch and Chaffinch). Mountain Linnet (see Twite).

LOON (see Diver).

MAGPIE (*pē-ā*).

piŋeacó (6), rnaŋ breac (6).

This bird is supposed to be a comparatively recent addition to the Irish fauna. It is of interest, therefore, that the first word corresponds with the Scotch "pioghaid" meaning Magpie. Since rnaŋ is a Woodpecker, the last word may have been applied to the Spotted Woodpecker which is likely to have been a resident bird when large forests existed in Ireland, though now a rarity.

MARSH HARRIER (see Falcon).

MARTIN (*gōwl-ān gē-hě*).

House Martin.—? ŋoblán ŋaorite (6).

Although O'Reilly gives this word for "Swallow," it is more likely to mean House Martin, as the two birds are habitually mistaken for one another. (Compare Swallow).

Sand Martin.—ŋoblán ŋainmheac (6).

MAVIS (see Thrush).

MEADOW PIPIT (see Pipit).

MERLIN (see Falcon).

MERGANSER, SHELL DUCK or SPEAR WIGEON (*thüm-æch-ān*).

? tumacān (6), ? tumčaipe (6).

These words are translated by Diver or Dipper by O'Reilly. I suggest that they mean Merganser, as Forbes identifies the Scotch "tumaire" with Merganser.

MISSSEL THRUSH (see Thrush).

MOTH HAWK (see Nightjar).

MURRE (see Guillemot).

NIGHTINGALE (*shin-äl-æh*).

rinneatāc (11), rinioatāc (6).

This is not an Irish bird and there is no evidence that it formerly inhabited Ireland. The Sedge Warbler has sometimes been spoken of as the "Irish Nightingale." O'Reilly identifies rinioatāc with Nightingale or Thrush (Compare Warbler).

NIGHTJAR, GOATSUCKER, FERN OWL or MOTH HAWK

(*thūrnā-lēn*).

tuṛna līn (1).

OSPREY (*ulər-ishkē*).

iolār uirge (6), pṛeacān ceannan (6), ṣṛuḅ (5), cóirneac (7).

The Osprey is now only a casual visitor. It seems to have been common in Ireland formerly according to Ussher and Warren.

OUZEL (see Dipper and Ring Ouzel).

OWL (*kjān kāt*).

ceann cait (7), ceann cuit (1), ullacācān (6), ulcābān (1), tulcābācān (6), mulcā (6), molcā (6), mucā (6), mulac (6), mulcān (6) caitleac oirde (7), comacōg (6).

The first two words meaning "Cat's head," are generally used now.

Barn Owl or Screech Owl.—coinnit (10), ṛṣṛeacōg peitge (10), corṛ rēneuc (10).

Long-eared or Horned Owl.—meanav (6), eun foḡta (6).

O'Reilly translates the first word merely by Owl, but according to Forbes all the words beginning with the letter

“M” stand for Horned Owl. These two are the only resident species in Ireland. Three others have been recorded as visitors.

OYSTER-CATCHER (*gǵilā-brēdje*).

ḡiolla brīḡde (7), pōilleac (3).

The Scotch Gaelic word corresponds to the first, while the Scotch “railleach” stands for Redshank, and it is so given by Pearse.

PARTRIDGE (*pǣth-rīsk*).

paitepears (1), paitepirc (7). pīotpīurḡ (6), péarpłós (6). ceapc tōmāin (6)

PEACOCK (*pae-chōg*).

péacós (6), peabōiteac (6), paḡḡat (6) Peahen.—peabōceapc (6).

This is not a native bird.

PEREGRINE (see Falcon).

PETREL (*lūch-īg fwār-īgě*).

? lučairō pīrīḡe (6).

Only one kind of Petrel breeds on the coast. The Irish name given is translated as “Sea Mouse” by O’Reilly, a term has been applied to the Petrel as well as to the Sandpiper and Dunlin.

PHEASANT (*kjark fjā*).

ceapc peāḡa, pīarun (1).

This is not a native bird.

PIGEON (see Dove).

PIPIT or TITLARK (*kīrk-ēn*).

cīrcīn (1).

Meadow Pipit or Bog Lark.—maḡos mōna (6), meann-tān (3).

I am doubtful as to the correctness of Colgan’s interpretation. In Scotch Gaelic the word “miontann” stands for Long-tailed Tit, and Dinneen gives meantān for Tit.

Rock Pipit.—cīrcīn tīāḡa (1). This Irish word is also applied to the Sandpiper.

PLOVER (*krut-ag*).

? κροττας (6). (Compare Curlew).

Golden Plover.—πρωος (1), πεσος (1), περσοος (6). Grey Plover.—πρωλλας (6). Green Plover (see Lapwing). Ringed Plover.—? αμασαν μοντις (6). (Compare Dotterel).

PTARMIGAN OR TERMAGANT (*tör-mäch-än*).

ταρμοσαν (6), ταρ μονας (6).

This bird does not live in Ireland now. Some bones found in Shandon Cave near Waterford have been doubtfully referred to this species and it is quite possible that it may have inhabited this country formerly. It still occurs in Scotland, and the two Irish words given resemble the Scotch words for Ptarmigan.

PUFFIN OR SEA-PARROT (*föch-æch*).

παδς (6), κυτρεας (3), ? κανος (7).

The last word is identified by Colgan and also by Ussher and Warren with the Shearwater.

QUAIL (*gjära-ghirt*).

σεαρπαδ κυρτ (6), σεαρπα κυρτ (1), σεαρρκυρτ (6).

RAIL.

Land Rail (see Corncrake). Water Rail—I can find no Irish name for this well-known resident bird.

RAVEN (*fěäch-dhüv*).

ριας ουβ (1), ριας (6), κνάνριας (6), βριαν (1), βριαν ουβ (6), κυρπα (10), βιατας (6). According to O'Reilly βριαν ουβ and κνάνριας may mean either Raven or Rook.

RAZORBILL (*kül-thrē*).

κοτραιγε (6), κροσαν (3).

REDBREAST (see Robin).

REDPOLL.

I am not acquainted with an Irish name.

REDSHANK (*köm-ghlös*).

cam glar (6), ποτλεας (4), σοβ λαβαρα (6), σοβλάν μαρια (6).

I am in doubt as to the correctness of identification of the last word. It is probably applicable to the Petrel or other small sea-bird.

REDSTART (*djärg-ān-ält*).

ṛeapṣán alt (6), ceannṛeapṣan (6).

It is remarkable that two Irish names should exist for such a rare bird, but as both of them have Scotch equivalents, the identification is probably correct, and we may assume that the Redstart was formerly more common than it is now.

REDWING.

I do not know an Irish name.

RING-DOVE (see Pigeon).

RING OUZEL or RING THRUSH (*rär*).

? reap (6), ? réapṣ (6).

O'Reilly applies these terms to the Blackbird, but they may possibly have stood originally for the Ring Ouzel which is distinguished from the Blackbird by the possession of a white ring across the throat.

ROBIN OR REDBREAST (*spídġ-ōg*).

rpīreōḡ (1), bṛúṛeapṣ (6), bṛuinṛeapṣan (6).

ROCK PIPIT (see Pipit).

ROOK (see Crow).

SANDERLING, SAND LARK, or SEA LARK (*lū-hər-ān*).

ludčapán (6).

SAND MARTIN (see Martin).

SANDPIPER, SANDTRIPPER or SAND-SNIPE (*gūbəd-ān*).

ḡobadán (1), ḡobacán (7), curcaḡ (6), ladḡán tṛáḡa (4).

O'Reilly identifies ḡobacán with Titling, but Dinneen points out that the word means a little bird frequenting sea-strands.

SCALD CROW (see Crow).

SEA GULL (see Gull.)

SEA PARROT (see Puffin.)

SEA SWALLOW (see Tern).

SHAG (*cǎlj-œh ghäv*).

caitleac òub (1). (Compare Cormorant).

SHEARWATER (*cān-ōg*).

cánōg (1). Only the Manx Shearwater is resident in Ireland. (Compare Puffin.)

SKY-LARK (see Lark).

SNIPE (*naesk*).

naor̥s (3), naor̥sa (1), naor̥ca (7), naor̥sać (9), naor̥cać (7),
 ʔaor̥s (4), cʔomán loin (6), cubas̥ ʒioʒaiać (6), ʒoðar̥
 oir̥œ (6), meannán acir̥ (6), meantán (6).

I am doubtful as to the correct identification of the last word. (Compare Meadow Pipit.) Jack Snipe.—meannan
 aéiać (1), meannán acir̥ (7), ʒaðair̥in ʔeor̥œa (7), ʒaðair̥in
 bainne beir̥œœ (7). The last word is used in Clare.

SUMMER SNIPE (see Sandpiper).

SONG THRUSH (see Thrush).

SPARROW (*gǎl-ūn*).

House Sparrow.—ʒeatb̥an (1), ʒeatūn (6).

Hedge Sparrow.—ʒeatb̥an ʒáiair̥ (6), ciotōʒ (6).

Ussher and Warren give ʔiab̥ōʒ which according to O'Reilly means Lark.

Tree Sparrow.—I do not know an Irish name.

SPARROW HAWK (see Falcon).

STARLING (*dridg*).

ʔʔuir̥ (1), ʔʔuir̥œōʒ (1), ʔʔoʔán (6).

STOCK DOVE (see Dove).

STONECHAT (*kăp-ĕn äthĭn*),

caipĭn airtinn (1), cloċpĕn (6), cairĭn ceann dub (3), cairĕin cloċ (9), cairĭn (7).

Ussher and Warren's Irish word is not in any dictionary while O'Reilly's term cloċpĕn is translated "Stonepecker." I have never heard Stonepecker applied to the Stonechat, but presume these words to be synonymous, for in Scotch Gaelic this species bears a similar name to the Irish term alluded to. The last word cairĭn or cairĕin seems to be the Whinchat. (Compare Whinchat).

STORK (*kŭr-wĕn*).

corġ bĕn (10), corġa bĕn (6).

At present the Stork is an extremely rare visitor to Ireland. The fact that it has an Irish name tends to show that it was more abundant in former times. The word according to Kuno Meyer occurs in the Book of Leinster and it is identical with the Scotch word.

SWALLOW (*āl-jĕ*).

äinte (7), äinteos (6), päinteos (1), pältos (1), sobĭan saoitĕ (6).

The third word is a corruption of äinteos.

SWAN (*älĕ*).

eala (1), äi (6), äla (6), äimĭo (6), seir (1), seime (6), sall (6), saos (6), cġeac (6), rearpġan (6), rearpĕn (6).

Some of these terms are probably obsolete. Three kinds of Swan have been observed in Ireland, one of them being an introduced species. Bewick's Swan is a regular winter visitor.

SWIFT.

I am not acquainted with an Irish word. This bird is larger than a Swallow, and is dark-brown underneath.

TEAL (see Duck).

TERMAGANT (see Ptarmigan).

TERN or SEA SWALLOW (*gŭr-ög*).

supos (1), seabġos (7). The first word is apparently a corruption of seabġos. In Scotch Gaelic there are the words "steardan, sternal, sternan and steirnal," meaning Tern, which ought to have some Irish equivalents. There are several kinds of Tern in Ireland.

THRUSH (*smōl-ach*).

rmólač (1), rmót (3), rmoltac (6), ciarpeac (6), céirpeac (6).
(Compare Blackbird).

Ussher and Warren identify ciarpeac and its variations with the Blackbird. According to Dinneen it may mean either a female Blackbird, a Thrush or a Woodlark. O'Reilly gives for it only Thrush. In Scotch Gaelic the word has been translated Thrush and Woodlark, but Forbes suggests that it may mean Missel Thrush and it is so rendered by Lynch.

MISSEL THRUSH.—ciarpeac (9), céirpeac (6).

TITLARK (see Pipit).

TIT or TITMOUSE (*kē-ach-ān*).

cíocán (6), meantán (7), cailleacás ceann dub (6)

Four kinds of Tit are common in Ireland.

TREE CREEPER (*snóg*).

? rnağ. (Compare Woodpecker).

A small bird sometimes erroneously called Woodpecker.

TREE SPARROW (see Sparrow).

TURKEY (*kjark frān-kach*).

cearc rpanac (6), coileac rpanac (7).

TURNSTONE.

This bird is related to the Lapwing, and one of the words given under that heading may possibly mean Turnstone.

TURTLE DOVE (see Dove).

TWITE or MOUNTAIN LINNET.

This bird is closely related to the Linnet and much resembles it. There is no distinct Irish name.

VULTURE (*kūn-ūdhach*).

confuadac (6).

Besides this word several others signify Vulture or any other ravenous bird such as ranağ which is translated Raven or Vulture by O'Reilly, whereas lachar means Vulture or any other large bird. The Vulture is only known in Ireland as an extremely rare accidental visitor.

WAGTAIL (*glös-ōg*).

ḡlarós (1), bꝛicín baintiḡearna (6), reáinín an bótairi (1).

I cannot find Ussher and Warren's last word in any dictionary. Four kinds of Wagtail have been noticed in Ireland. Only two of these are common.

WARBLER (*kjöl-irē*).

ceolairē (6), aḃránairē (7).

There are several distinct kinds of Warblers in Ireland, most of them being rare summer visitors. It is probable that the words given under Nightingale refer to one or more of the Warblers.

WATER HEN (see Moor Hen).

WATER RAIL (see Rail).

WHEATEAR (*kash-tēn klūch*).

cairtín cloč (1), cairtín (3).

Dinneen translates the last word by Stonechat.

WHIMBREL or MAY BIRD.

This is a regular visitor related to the Curlew. I do not know an Irish name.

WHINCHAT.

Like the Wheatear this is a summer visitor, but less common, and I am not acquainted with an Irish name.

WHITETHROAT.

No Irish name seems to exist for this common summer visitor.

WIGEON (see Duck).

WILLOCK (see Guillemot).

WOODCOCK (*krōw-ær*).

creabair (1), creabairē (6), creabairi (1), cꝛom na nꝛuileōḡ (6), uḡairas (6), creabair caoč (3).

WOODLARK (see Lark).

WOODPECKER (*snōḡ*).

rnaḡ (6), rnaḡaḡairac (6), rnaḡ ḡairac (7), ? rnaḡ bꝛeac (6), laḡairi cōille (6).

O'Reilly translates the last word by Goldfinch or Woodpecker, two birds which do not resemble one another in the

least. I have suggested that the word may mean Gold-crested Wren (compare Wren). Woodpeckers are not resident in Ireland now. They are classed among the rare visitors, but it is quite possible that they may have been common when large forests existed in the country. The Term "Woodpecker" is frequently applied to the Tree-Creeper, which is quite a distinct bird. The word "snag" is translated in the Scotch Gaelic by Tree-creeper or Woodpecker, whereas "snagardarach" is rendered by "Great spotted Woodpecker." (Compare Magpie and Tree-Creeper).

WOOD PIGEON (see Dove).

WREN (*dról-ēn*).

Common Wren.—*ṛpeoitín* (1), *ṛpeoitlán* (6), *ṛpeotlán* (7), *ṛpeactán* (6), *ṛpeactán donn* (6), *ṛpean* (6).

Gold-crested Wren.—*ṛpeoitín earbuig* (1), *ṛpeoitín an earbuig* (3). I cannot find these words in any dictionary. The word *ṛparar* *coitlé* given above as Woodpecker may be this species. Willow Wren.—I do not know an Irish word for this common summer visitor. Wood Wren.—This is a rare summer visitor.

YELLOW HAMMER (see Bunting).

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National Museum, Dublin.

ICHNEUMONIDEA FROM THE NORTH OF IRELAND.

BY REV. W. F. JOHNSON, M.A., F.E.S., M.R.I.A.

I have continued to collect these interesting insects and give below the results of my work at them last year. I have endeavoured not to record any species a second time from the same locality except where some variation made it proper to mention the species again. The localities are practically the same as in my previous list,¹ but I had a short time at Bellurgan in Co. Louth where I picked up a few specimens along the sea shore. I have once more to thank Mr. Claude Morley, F.E.S., for kind help with various troublesome species.

ICHNEUMONINAE.

- Cratichneumon dissimilis** Grav.—Coolmore roadside among willows; a rare species.
- C. fabricator** F. var. **impugnator** Wesm.—Poyntzpass, hill, in June. In this variety the hind femora are entirely black. It is common here.
- Ichneumon xanthorius** Forst.—Poyntzpass in my stable window in June. Coolmore on the roadside among herbage.
- I. suspiciosus** Wesm.—Coolmore on the roadside.
- I. stramentarius** Grav.—Coolmore among willows.
- I. militaris** Grav.—Poyntzpass at flowers of Angelica in August. Not a common species.
- I. gracilicornis** Grav.—Coolmore on roadside.
- Spilichneumon Fabricii** Grav.—Poyntzpass in my stable window in June, July and October, in one of my fields at Umbelliferae in June.
- S. occisorius** Fab.—Coolmore on the roadside among willows, a male rather larger than usual.
- Amblyteles oratorius** Fab.—Poyntzpass. I captured a fine male flying about hazel trees in my garden in June.
- Platylabus rubellus** Grav.—Coolmore on the roadside among willows. This species is not common in Great Britain; abroad it has been recorded from Sweden, Germany, and Austria.
- Phaeogenes argutus** Wesm.—Poyntzpass in my stable window in July.
- P. heterogonus** Holmgr.—Poyntzpass at Hogweed in July. Apparently very rare in Great Britain. Mr Morley says "I know of but one indigenous example of this species." Brit. Ich. i., 252. The specimen referred to was taken at Loch Leven in Scotland. Abroad it is recorded from Sweden and is said to occur in Northern Spain.
- P. ophthalmicus** Wesm.—Coolmore among willows.

¹ *Irish Nat.*, vol. xxiii., p. 64.

- P. rusticatus** Wesm.—Coolmore among willows on the roadside; not a common species in Great Britain.
- Dicaelotus pumilus** Grav.—Poyntzpass in my stable window in July. Coolmore on the sandhills at thistles and on the roadside among willows.
- D. Cameroni** Bridg.—Poyntzpass in one of my fields in May; a female form with the abdomen mainly red similar to those taken by Mr. Donisthorpe at Rossbeigh, Co. Kerry, in 1902; Brit. Ich., i., 275.
- D. ruficoxatus** Grav.—Poyntzpass in my stable window in July. It is rare in England and Scotland and on the Continent occurs in Belgium and France.
- Colpognathus celerator** Grav.—Coolmore at flowers of *Daucus Carota*.
- Centeterus opprimator** Grav.—Coolmore among willows.

CRYPTINAE.

- Plectrocryptus grisescens** Grav.—Coolmore among willows. An uncommon species in Great Britain.
- Microcryptus nigrocinctus** Grav.—Coolmore on the roadside.
- M. brachypterus** Grav.—Coolmore among herbage.
- Glyphichnemis profligator** Fab.—Poyntzpass at Hogweed in July; a small female example.
- G. suffolciensis** Morl.—Poyntzpass in field at Hogweed in July.
- Phygadeon bitinctus** Gmel.—Coolmore on outside of bungalow and on roadside.
- P. dumetorum** Grav.—Coolmore on roadside at Umbelliferae.
- P. exiguus** Grav.—Poyntzpass by sweeping in field in August: Coolmore on roadside.
- P. mixtus** Bridg.—Poyntzpass in stable window in June.
- P. scaposus** Thoms.—Poyntzpass in stable window in July. Coolmore on roadside among herbage.
- P. dimidiatus** Thoms.—Coolmore at Umbelliferae on roadside.
- Hemiteles cingulator** Grav.—Poyntzpass in window of my house in June. Mr. Morley remarks of this species Brit. Ichn., ii., 135. "It is by no means uncommon with us and is usually found in house windows in June and July."
- H. politus** Bridg.—Coolmore on sandhills at thistles.
- Pezomachus zonatus** Forst.—Coolmore at flowers of *Daucus Carota*. An apterous male, that sex being usually winged. The species has been bred from a spider's nest.
- P. vagans** Oliv.—Poyntzpass in moss in January.
- P. carnifex** Forst.—Coolmore among willows.
- P. fasciatus** Fab.—Coolmore on roadside at Umbelliferae.
- Atractodes tenebricosus** Grav. (*vestalis* Hal.)—Poyntzpass in stable window in July.
- A. gilvipes** Holmgr.—Coolmore on the sandhills at thistles.
- Spilocryptus abbreviator** Fab.—Coolmore among willows; a male of this uncommon species.
- Cryptus albatorius** Vill.—Belfast taken by the late H. L. Orr in June, 1909.

PIMPLINAE.

- Pimpla punctiventris** Thoms.—Coolmore on roadside.
P. ventricosa Tchh.—Coolmore on the sandhills at thistles both sexes, one female had the areolet pentagonal.
P. examinator Fab.—Coolmore on roadside.
P. maculator Fab.—Poyntzpass at Hogweed in my fields in July.
Schizopyga circulator Panz.—Coolmore among willows.
Glypta scalaris Grav.—Coolmore on roadside at Umbelliferae.
Lissonota Fletcheri Bridg.—Coolmore among willows.
L. subaciculata Bridg.—Poyntzpass in field at Hogweed in July.
L. variipes Desv.—Coolmore on sandhills and roadside. I took a specimen of this common species with the face entirely flavous and another with the base of the antennae red.

TRYPHONINAE

- Polyclistus mansuetor** Grav.—Poyntzpass by sweeping in August.
Exochus podagricus Grav.—Poyntzpass on hill in June.
E. globulipes Desv.—Coolmore among willows.
E. prosopius Grav.—Coolmore among willows; not a common species.
E. nigripalpis Thoms.—Poyntzpass a female on the bark of *Pinus sylvestris* in June.
Orthocentrus fulvipes Grav.—Poyntzpass in moss from a wood in January.
Bassus tricinatus Grav.—Poyntzpass on hill in June, Bellurgan on sea shore in June, var. *nemoralis* Holmgr.—Coolmore at *Daucus Carota* on roadside.
B. variicoxa Thoms.—Coolmore on sandhills at thistles.
Homocidus cinetus Grav. var. *lateralis* Grav.—Omeath, Co. Louth, in June. Poyntzpass in my house in August.
H. caudatus Thoms.—Poyntzpass on hill in June.
H. pietus Grav.—Coolmore among willows.
H. signatus Grav.—Coolmore on sandhills at thistles.
Promethus sulcator Grav.—Coolmore on roadside among herbage.
P. cognatus Holmgr.—Coolmore on outside of bungalow and on roadside among herbage, the latter specimen has the abdomen dark.
Smicroplectrus quinquecinctus Grav.—Poyntzpass on the hill in June.
Perispodus sulphuratus Grav.—Belfast taken by the late H. L. Orr.
Euryproctus lateralis Grav.—Coolmore on the cliff at Owen's Fort, at Umbelliferae.
Perilissus filicornis Grav.—Coolmore at flowers on roadside, a small specimen of the female.
Eclitus ornatus Holmgr.—Poyntzpass on hill in July.
E. fontinalis Holmgr.—Poyntzpass in my back avenue in June.
Polyblastus marginatus Holmgr.—Coolmore at flowers of *Daucus Carota* on roadside.

OPHIONINAE.

- Limnerium albidum** Gmel.—Poyntzpass at Hogweed in July.
Meloboris crassicornis Grav.—Coolmore on roadside at *Daucus Carota*.
Angitia tibialis Grav.—Poyntzpass in window of my house in July.
A. majalis Grav.—Coolmore on sandhills at thistles.
A. fenestralis Holmgr.—Coolmore among willows.
Mesochorus viticollis Holmgr.—Coolmore among willows.
Cymodusa cruentata Grav.—Coolmore at *Daucus Carota*.

BRACONIDAE.

- Bracon exarator** Marshall.—Coolmore at *Daucus Carota* on roadside, several females. Marshall (*Trans. Ent. Soc.*, 1885), describing this species says of its occurrence in Britain "A single female captured by Bridgeman at Brundall, Norfolk."
B. anthracinus Nees.—Poyntzpass at Hogweed in July. Bellurgan on sea shore in June.
Phanormis catenator Hal.—Poyntzpass among herbage in field in July.
Spathius rubidus Rossi.—Poyntzpass in stable window in July. Less common than **S. exarator**, L.
Rhogas gasterator Jurine.—Poyntzpass on hill and in field in July.
R. circumscriptus Nees.—Coolmore on roadside at Umbelliferae. This female seems to correspond to Reinhard's var. 7.
Microgaster globatus L.—Coolmore at Umbelliferae on roadside.
M. tibialis Nees. var. **vulgaris** Ruthe.—Coolmore at Umbelliferae.
M. hospes Marshall.—Poyntzpass in field at Angelica in August.
Eubadizon flavipes Hal.—Poyntzpass in field at Hogweed in July and August. Coolmore at *Daucus Carota* on roadside.
Alysia manducator Panz.—Poyntzpass in July.
Phaenocarpa ruficeps Nees.—Coolmore on sandhills at thistles.
Coelinus podagricus Hal.—Poyntzpass on hill in June; first taken by Haliday near Dublin.
C. niger Nees.—Coolmore on sandhills at thistles.

CYNIPIDAE.

- Eucoela proxima** Cam.—Coolmore at Umbelliferae.

I should mention that my collecting at Coolmore was done during the month of September.

Acton Glebe, Poyntzpass,

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a pair of Golden Pheasants from Mrs. Horne-Dyas, a Peacock from Mr. Hornidge, Mergansers from Mr. H. B. Rathborne, and a pair of Muscovy Ducks from Mrs. FitzPatrick. Two female Lion cubs have been born in the Roberts House, the parents being "Fritz" and "Sheila."

BELFAST NATURALISTS' FIELD CLUB.

MAY 15.—HOLYWOOD FORESHORE.—This was a half-day excursion to the section of the raised beach resting on Boulder-clay which had been so well exposed by storms last winter. The raised beach here contains worked flints of a very early type, like those of Ballyholme, Larne, the Kinnegar at Holywood, and Grimes Graves and Cissbury in England. Many of these were collected by members of the party, which numbered over sixty. When all were assembled at the section the conductor, R. J. Welch, called on DR. CHARLESWORTH, F.G.S. (who had brought a party from the Queen's University), to give a short talk about the geology of that particular corner of County Down. A visit was then paid to the Carboniferous fossiliferous shales at Cultra, from which the party proceeded to the residence of a member of the Club, F. A. Heron, for tea. One senior and three new junior members were elected, and the party then split up, some hurrying off to the Permian outcrop, now exposed at low water, others visiting the garden and Mr. Heron's collection of living birds, one of which, a Nightingale, was of special interest, so few members of the party had ever seen one in the flesh. Others finished their collecting of various invertebrate groups. Six species of Isopods (woodlice) were noted, including two of our rare species, *Trichoniscus roseus* and *Haplophthalmus Mengii*. Good collections of Arachnids and Myriopods were brought away for identification.

DUBLIN NATURALISTS' FIELD CLUB.

JUNE 12.—EXCURSION TO BALROTHERY ESKE.—Sixteen members and visitors, conducted by the President, started from Terenure at 2.15 by steam tram for Balrothery, whence they walked along the course of the esker to Redcow, there turning to the right and returning by Drimnagh and Dolphin's Barn, reaching town about 7 o'clock. The walk for the first half of its length leading through the extremely picturesque lane past the ruins of Tymon and Ballymount Castle proved interesting at every stage, and most of the local plants associated with the locality were identified, though it is to be feared that the Scale Fern (*Ceterach officinarum*) has vanished from an old habitat near Ballymount. The common Dog Rose was in exceptionally good bloom for the early season; the Sweet Violet, though quite over, was found in its old abundance below Tymon Castle, and among other local plants noticed were the Greater Knapweed (*Centaurea Scabiosa*), Henbit (*Lamium amplexicaule*), the critical and rather uncertainly distributed *Ranunculus heterophyllus*

(which was in abundant flower in quarry pools near Ballymount), and, not least in interest, the London Rocket (*Sisymbrium Irio*). This last was accounted quite a discovery, the plant being found in remarkable abundance for a distance of probably more than half a mile along the Dolphin's Barn and Drimnagh Road. It has long been accounted a plant with a vanishing tendency about Dublin, and its status here shows something like renewed vitality. The quarry pools about Ballymount proved interesting zoologically as well as botanically, and some leeches, planarian worms, and water mites were captured and bottled, while a large water-beetle (*Dytiscus*) and a good many other aquatic insects came under observation. The small freshwater leech *Helobdella stagnalis* has been identified among the captures made. Much interest was aroused at one of the quarry pools by the presence of a small Trout, whose presence at such a place seemed to point to some form of "accidental dispersal."

NOTES.

BOTANY.

Lathraea squamaria in South Dublin.

In a visit which I made lately to Friarstown Glen I noticed several specimens of *Lathraea squamaria* growing on the roots of an elm tree. In Mr. Colgan's "Flora of Dublin" it appears to be found in districts "4," "6," and "8," but not in district "7."

JOHN A. PALMER.

Rathmines, Dublin.

Peucedanum Ostruthium, Linn.

Outside of Ulster, very few Irish records exist for this plant. It appears to be one of those, like *Myrrhis odorata*, which we mainly owe to Scottish settlers, both being held in high repute in old times in regard to their medicinal qualities. In the North-east, *Myrrhis* is a very familiar plant, and is thoroughly naturalized, but the standing of the Masterwort is more doubtful. I have always been puzzled by the observation of S. A. Stewart on this plant in *Flora of the North-east of Ireland*,—"An introduced plant, brought with seed, and never permanent." Now, this plant increases mainly by its creeping rhizomes, and occurs (in the North-east) mostly on banks near cottages, where it forms colonies. The circumstances suggest neither introduction by seed nor temporary occupation; rather deliberate planting, as in the case of *Myrrhis*, Tansy, Elecampane, and other medicinal herbs and pot-herbs which are firm-rooting and permanent concomitants of human habitations in the district. These considerations were forced on my mind recently at Hilltown, in Co. Down, where strong colonies of the plant were seen in several spots growing as described. The plant had evidently been introduced by the occupier of the ruined cottage near which it grew, and will certainly persist there unless the banks on which it grows are entirely removed.

Dublin.

R. LLOYD PRAEGER.

Kilkenny Plants.

When exploring Co. Kilkenny for the purposes of "Irish Topographical Botany," the only bogland I came across lay in the extreme north-west, towards Urlingford, close to the Tipperary boundary, and almost the only records of bog plants from the county appertain to that visit. Lately, in company with Mr. and Mrs. W. B. Wright, I visited one of the few bits of bog which occupy the higher parts of the Kilkenny coal field, near Castlecomer. Here *Andromeda polifolia*, *Vaccinium Oxycoccus*, and *Lastrea spinulosa*, all very rare in Kilkenny, were seen. Two plants new to the county were noted—*Crepis biennis* about Kilkenny and Castlecomer, and *Equisetum sylvaticum* about the latter place. Three other species—*Ranunculus Lenormandi*, *Botrychium Lunaria* and *Equisetum maximum*—with only one previous county record, were seen about Castlecomer; also plenty of *Crepis paludosa*.

R. LLOYD PRAEGER.

Dublin.

ZOOLOGY.

Callidium violaceum introduced in Belfast.

My friend, Mr. James Orr of Garfield Street, Belfast, sent me a specimen of the above beetle which he had found among goods sent from Sheffield. As the goods were packed with sawdust, the beetle had quite a congenial resting place. It was quite a fresh specimen, so that it may have been as a pupa in the wood of the packing case. It is easy to see how this beetle, had it come under a less observant eye, might have made good its escape and caused an incorrect record of its presence as a denizen of the North of Ireland.

W. F. JOHNSON.

Poyntzpass.

GEOLOGY.

Analysis of a Chlorite found in Cumeengeera Valley, Co. Kerry.

Professor Cole has identified the mineral as an Aphrosiderite. Its composition proved to be as follows:—

	Per cent.			
Loss on ignition	10.0
Silica	24.8
Alumina	23.4
Ferrous oxide	30.6
Lime	0.7
Magnesia	11.0

Colour, a dark green. Softness—1. It consists of a mass of small crystals whose optical properties could not be determined.

Municipal Technical Institute, Limerick.

H. M. ATKINSON.

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THE SCOTTISH NATURALIST,

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THE NON-MARINE MOLLUSCA OF SOUTH GALWAY.

BY R. A. PHILLIPS, M.R.I.A.

The Land and Freshwater Mollusks of the western and eastern divisions of Co. Galway have been dealt with in valuable papers in the "Irish Naturalist" and "Journal of Conchology," but, so far as I can discover, practically nothing has been published concerning the mollusks of the southern division (Vice-county No. 15 of Praeger's "Irish Topographical Botany") which comprises that portion of the county lying south of the railway from Oranmore to Ballinasloe.

For some years past, as opportunities occurred, I have at various times collected specimens, and investigated the distribution of these animals, and am now in a position to record the existence of one hundred and three species in the vice-county, a number larger than is known to occur in any other Irish county-division except Clare, which has one hundred and six species.

Seventy-nine of these were found before the end of the year 1910, and a list of them furnished to Mr. A. W. Stelfox, who included them in the tables of distribution in his "List of the Land and Freshwater Mollusks of Ireland" ¹ but as details of local distribution are not given in that work these particulars are here published for the first time.

The area under consideration is about 738 square miles in extent, its surface is diversified and, for the most part, well adapted to sustain molluscan life. The greater portion, about four-fifths, lies on the Carboniferous limestone, and the remainder on the Old Red Sandstone and Silurian of the Slieve Aughty mountain range between Woodford and Loughrea. It is well watered, in the east by the Shannon with its tributaries and Lough Derg, in the north by the River Suck and the Ballinasloe branch of the Grand Canal, and in the south and centre by numerous lakes, streams, and large drains.

¹ *Proceedings Roy. Irish Academy*, vol. xxix., Section B., page 65-164, 1911.

Immense tracts of calcareous grassland, and numerous and extensive peat bogs characterize the landscape in many districts, esker ridges and hillocks are frequent, and bare limestone crag is exposed over large areas. Many old woods, native or anciently planted, occur, those on the limestone crag at Coole, Garryland and Lough Cutra, near Gort, and those on the Old Red Sandstone near Woodford being of special interest. In the west a coast line of about thirty miles is presented by the indentations of Galway Bay, from Aughinish to Oranmore, along which are small estuaries and brackish pools.

The districts around Gort and Ballinasloe seem to produce the largest land fauna, and the waters of the Shannon, the Grand Canal, and Lough Rea present the greatest number of aquatic species.

Lough Rea, a fine sheet of beautifully clear water about a square mile in extent, situated in the centre of the vice-county, with limestone bottom and surroundings, is exceedingly prolific, it contains no fewer than thirty-three species, including ten of our thirteen Irish *Pisidia*, and is also remarkable for peculiar forms of *Limnaea pereger*, *L. stagnalis*, *L. palustris*, and *Neritina fluviatilis*. Immense numbers of shells are cast up on its shores during gales, and I have on such occasions met with deposits over four feet long and two feet wide, consisting almost entirely of *Pisidia*, and here and there large fringes of various univalves and *Sphaerium corneum*.

This is in marked contrast to Lough Atorick, situated among the non-calcareous hills about six miles west of Woodford, in which I have found only fourteen species, and but very few drift shells scattered on its shores.

The Grand Canal in the neighbourhood of Ballinasloe seems likely to be destroyed as a habitat for some of the rarer and less hardy species. During the past two or three years motor barges have been used there; these stir up the mud, and discharge quantities of oil which, mixing together, keep the water in a constant state of pollution. Already *Bithynia Leachi*, *Amphipeplea glutinosa*, *Limnaea auricularia*, and other species have greatly diminished in

numbers, and it is to be feared that some of them will soon be quite exterminated.

At Woodford the association of old woodland species and varieties is most characteristic. Here may be found in one wood *Limax cinereo-niger*, *L. arborum*, *Arion subfuscus*, *Hyalinia nitidula* var. *helmi*, *Hy. pura*, *Zonitoides excavatus*, *Sphyradium edentulum*, *Acanthinula lamellata*, and a thin, white-lipped form of *Helix nemoralis*.

Xerophiles reach their highest development in the districts where eskers occur, as at Ballinasloe, where *Helicella virgata*, *H. itala*, *H. intersecta*, and *H. barbara* live together in great profusion, and show considerable variation.

Large deposits of marl underlie the peat and soil in several localities, notably along the Shannon valley, near Portumna, and by Lough Rea; these deposits are largely composed of freshwater shells mostly in a state of good preservation, though fragile and bleached white, showing that in former times lakes extended over many miles of country now under meadow, pasture, or tillage. Material from the deposit near Portumna bridge, where it is covered by a dark peaty soil varying from two to four feet in depth, which was examined by Mr. A. S. Kennard and myself yielded the following species:—*Limnaea auricularia*, *L. pereger*, *L. stagnalis*, *L. palustris*, *L. truncatula*, *Amphipeplea glutinosa*, *Planorbis glaber*, *P. crista*, *P. carinatus*, *P. umbilicatus*, *P. vortex*, *P. contortus*, *P. fontanus*, *Bithynia tentaculata*, *Valvata piscinalis*, *V. cristata*, *Sphaerium corneum*, *Pisidium amnicum*, *P. obtusale*, *P. pusillum*, and *P. milium*. All these species, except, perhaps, *Amphipeplea glutinosa* and *Planorbis glaber*, still live in the neighbourhood. The marl near Loughrea has not been thoroughly investigated, but from a rough examination on the spot, its fauna seems to be poor in comparison with that of the adjoining lough.

Deposits of a different nature occur in places along the banks of the River Suck, near Ballinasloe; these consist of thin layers of shells sandwiched between alternate strata of sand and clay. Samples taken from layers in the exposed section of a fallen bank about three to four feet below the surface of the adjoining field were found when

analysed to contain the following species :—*Hyalinia raditula*, *Zonitoides nitidus*, *Hygromia hispidula*, *Vallonia pulchella*, *Helix nemoralis*, *Succinea Pfeifferi*, *Carychium minimum*, *Limnaea pereger*, *L. stagnalis*, *L. palustris*, *L. truncatula*, *Amphipeplea glutinosa*, *Planorbis albus*, *P. crista*, *P. carinatus*, *P. umbilicatus*, *P. vortex*, *P. leucostoma*, *P. contortus*, *Physa fontinalis*, *Aplecta hypnorum*, *Bithynia tentaculata*, *Valvata piscinalis*, *V. cristata*, *Neritina fluviatilis*, *Sphaerium corneum*, *Pisidium amnicum*, *P. subtruncatum*, *P. pusillum*, and *P. casertanum*. This seems to be a deposit of drift shells formed at a time when the river was wider than it is at present. All the species still live in the vicinity.

A noteworthy feature in connection with the molluscan fauna of South Galway is the presence so far west of several species such as *Helix hortensis* (var. *olivacea*), *Ena obscura*, *Amphipeplea glutinosa*, *Planorbis carinatus*, *Bithynia Leachi*, *Sphaerium lacustre*, and *Pisidium amnicum* whose headquarters in Ireland are decidedly eastern.

Bithynia leachi reaches here the extreme western limit of its geographical distribution.

Species absent from the list, but recorded from one or more of the adjoining counties and vice-counties are *Hygromia fusca*, *H. granulata*, *Vertigo Lilljeborgi*, *V. angustior*, *Succinea oblonga*, *Paludetrina ventrosa*, and *Margaritana margaritifera*. Suitable habitats for all or most of these occur and further investigation may reveal the presence of some of them here also.

Pisidia have been collected in many localities besides those mentioned, but the only specimens recorded here, except in the case of *P. amnicum*, are those which have been identified by Mr. B. B. Woodward, F.L.S., whose kindness in thus assisting me I gratefully acknowledge.

My thanks are due also to Mr. A. S. Kennard, F.G.S., for notes on collections of shells sent him from numerous localities, to Mr. A. W. Stelfox, M.R.I.A., and Mr. J. W. Taylor, of Leeds, for assistance in identifying closely-allied species and abnormal specimens, and to the late Dr. George J. Fogerty, of Limerick, who was my companion and helper on many collecting expeditions in South Galway and elsewhere.

The nomenclature and sequence followed in the list of species are with one or two exceptions those used by Mr. Stelfox in his Irish list.

LIST OF SPECIES.

Testacella haliotidea Drap.—In the garden at Portumna Castle, and under timber and stones in a field adjoining the same garden. Also, var. *flavescens*, specimen of a deep canary-yellow colour, in a garden at Ballinasloe.

T. scutulum Sowerby.—In a garden in the town at Portumna, and with the last species at Portumna Castle and Ballinasloe. Mr. J. W. Taylor identified both species as occurring in a gathering sent him from Portumna Castle. The three gardens mentioned are the only ones in which I have searched for the snail slugs in the vice-county, so they may be more widely distributed than shown by these records. They have probably been introduced with plants in each locality.

Limax maximus L.—Frequent in the woods at Woodford, Portumna, Gort, and Dalystown. Under stones and logs near Loughrea, Ballinasloe, Kilmacduagh, and Oranmore. Var. *fasciata* at Woodford and Gort.

L. cinereo-niger Wolf.—This beautiful slug is plentiful under stones and in moss on trees in the old woods at Woodford, but I have not seen it elsewhere in the county.

L. flavus L.—Like most members of the genus this species is nocturnal in its habits, and never leaves the small and narrow crevices in which it hides during the day. At night, however, especially in damp weather, a light thrown on old walls in the neighbourhood of almost any town or village will reveal numerous specimens actively gliding over stones and mortar. Seen at Loughrea, Gort, Portumna, Ballinasloe, and Oranmore. Also in a wood close to the village at Woodford. Never found far from human dwellings, and therefore, probably an introduced species.

L. arborum Bouch.-Chant.—Generally distributed in the woods and in the open country where it shelters in stone fences and in the crevices of rocks and limestone crag. Vars. *bettonii* and *heynemanus* at Woodford.

Agriolimax agrestis L.—Common throughout. Varieties seen are *albida*, *lilacina*, *nigra*, and *reticulata*.

A. laevis Müll.—Frequent in marshes and along the margins of rivers and lakes near Portumna, Loughrea, Ballinasloe, Coole, Kilmacduagh, Clarinbridge, Lough Atorick, and many other places. In woods at Woodford.

Milax Sowerbyi Fér.—Common in gardens and under stones by roadsides near Gort, Loughrea, Portumna, Ballinasloe, and Athenry. By the sea, near walls and old buildings, at Oranmore, Kilcolgan, Kinvarra, and Aghinish. Probably native, but an obvious introduction in some places.

Milax gagates Drap.—Rather rare. The habitats of this species are usually more remote from human influence than those of *M. Sowerbyi*. It occurs by the seashore at Kinvarra and Aughinish, and inland at Gort, Coole, Ballinasloe, and Portumna. Var. *plumbea* is the prevailing form; var. *rava* was taken at Woodford, where it probably is an introduction.

Vitrina pellucida Müll.—Widely distributed, but nowhere abundant. A rather flat form, probably var. *depressiuscula*, was found in woods at Coole.

Hyalinia lucida Drap.—A few specimens in the garden at Portumna Castle, and one dead shell in river drift at Portumna bridge. Not native in South Galway.

H. cellaria Müll.—Abundant throughout the division. The prevailing form is the large Irish one, *Vitrea hibernica* Kennard, of which fine examples measuring 13 to 14 mm. diameter were taken at Gort, Kinvarra, and Kiltiernan. The var. *compacta* (= *V. Scharffi* Kennard) occurs at Portumna and Dalystown.

The white form, var. *albina* is plentiful at Dunsandle, and occurs also in the Woodford woods. A remarkable woodland form lives in an old wood at Woodford, the shells being of a pale fawn colour, very large and high-spired. It is figured in Mr. Stelfox's Irish list (Pl. VII., figs. 51 and 52). Specimens almost identical with these were collected by Mr. R. Welch in old woods at Glencar, Co. Sligo.

H. alliaria Müller.—A common species in woods, on moss-covered trees, walls, and rocks in every locality visited. Fine specimens somewhat resembling *Hy. helvetica* occur in the Woodford woods. A pale flat-shelled form was found on limestone rocks at Coole and other places.

Var. *viridula* is scarce, it occurs at Garbally, Dalystown, and Woodford. An opaque white form was taken on the seashore just above high-water mark at Kinvarra.

H. nitidula Drap.—Generally distributed, but nowhere abundant, the small form—var. *nitens*, prevailing. Two pretty forms of the white var. *helmi* occur, one, of which I found a large colony on Church Island in Lough Derg, is a rather large opaque waxy-looking shell, the other is smaller, more compact, and semi-transparent, it is fairly plentiful in the woods at Woodford.

H. pura Alder.—Widely distributed in woods and damp places. The typical white form is frequent in the Woodford district, the var. *nitidosa* prevails elsewhere.

H. radiatula Alder.—Frequent in woods and other damp places, particularly abundant along the shores of Lough Derg, L. Rea, L. Coole, and L. Cutra. Var. *viridiscenti-alba* near Portumna, Woodford, and Aughinish.

H. crystallina Müll.—Common in woods and damp places throughout the division. Var. *contracta* is frequent: I have noticed it at Portumna, Coole, Woodford, and Loughrea.

Zonitoides nitidus Müll.—Common on lake shores, in marshes and by the sides of ditches in all parts of the vice-county.

- Z. excavatus** Bean.—The non-calcareous district of Woodford provides the only congenial habitat for this calcifuge species in the vice-county. It is plentiful in the old woods of that locality associated with *Limax cinereo-niger*, *Acanthinula lamellata*, and *Hy. nitidula* var. *helmi*. The typical dark form seems to be quite absent, all the specimens seen by me being var. *vitrina*.
- Euconulus fulvus** Müll.—Widely distributed, but not common, except in the decaying rejectamenta of lakes and rivers. Var. *alderi* occurs by Lough Derg near Portumna.
- Arion ater** L.—Common throughout the district. Vars. *castanea* and *plumbea* are frequent. Var. *succinea* is plentiful in the Woodford woods, and var. *bicolor* has been found near Portumna and Woodford.
- A. subfuscus** Drap.—Widely distributed, but not common. Vars. *rufofusca*, *cinereo-fusca* and *fuliginea* were all taken in woods at Woodford.
- A. intermedius** Normand.—Generally distributed. Seen in woods at Woodford, Coole, and Dalystown; on the shores of L. Cutra and L. Derg; under old coffin-boards at Kilmacduagh; also at Ballinasloe, Portumna, and Oranmore. Yellowish-grey is the most prevalent colour form.
- A. hortensis** Fér.—Common throughout. Abundant in gardens and by walls near towns and villages. Frequent in woods, as at Woodford, Dalystown, Portumna, and Lough Cutra, and by the sea at Oranmore and Aughinish. The usual colour form is black, but grey and brown specimens are frequent. Native in the woods and by the sea, perhaps introduced in some of its other habitats.
- A. circumscriptus** Johnston.—Generally distributed. Seen in nearly every locality visited, but always in small numbers.
- Punctum pygmaeum** Drap.—In woods at Woodford, Portumna, Coole, Lough Cutra, Castle Taylor, and Kilcolgan. Under stones and logs on the shores of L. Derg. Very numerous in flood debris at Coole.
- Sphyradium edentulum** Drap.—Frequent in woods throughout, also in marshy places near most of the lakes. Var. *columella* Jeffreys occurs under stones by Lough Rea, on a wall near Portumna with *Ena obscura* and *Vertigo pusilla* and in a wood at Castle Taylor. This form is not *S. columella* von Martens.
- Pyramidula rupestris** Drap.—Exceedingly abundant on rocks and walls throughout the limestone area. Sparingly on limestone boulders in a small isolated deposit of boulder-clay about a mile west of Woodford.
- P. rotundata** Müll.—Common everywhere. Varies in height of spire, vars. *turtoni* and *pyramidalis* both being represented. In old woods at Woodford, Portumna, and Coole; also by the sea at Aughinish and Kinvarra, greenish-white and fawn unicolours are common.
- Helicella virgata** Da Costa.—Widely distributed but, except along the coast, not general. Abundant where it occurs at Aughinish, Kinvarra, Kilcolgan, Oranmore, also inland at Gort, Ardahan, Athenry, Ballinasloe, Portumna, and Loughrea. Banded forms and var. *lutescens* are common. Vars. *submaritima*, *albida*, *alba*, and *hyalozonata* are

frequent. The dark varieties *leucozona* and *nigrescens* which are frequent in the East of Ireland are quite absent here.

Helicella itala L.—Common over the whole limestone area, and occurs also at Woodford. Along the shores of Galway Bay it is usually of normal size, inland it is much larger, particularly at Loughrea, Gort, and Portumna, where fine specimens may be obtained. Besides the type, vars. *alba*, *hyalozonata*, *lentiginosa*, and *leucozona* all occur in more or less abundance. A single pyramid-shaped specimen taken at Gort agrees, according to Mr. J. W. Taylor, with the *Helix gracilis* of Turton.

H. intersecta Poiret.—Widely distributed, but not nearly so plentiful as either of the last two species. Taken in numerous stations from Aghinish and Oranmore to Portumna and Ballinasloe. The shells are similar in size and form to those found in the central and eastern counties, the large form of the extreme west being absent. The usual colour variations are those described as vars. *fulva* and *lutescens*, the var. *ornata* is frequent in small numbers, and the rare var. *obliterata* was found very sparingly on an esker at Ballinasloe.

H. barbara L.—Local. This species, which in Great Britain is always maritime in its distribution, occurs by the sea at Aghinish, Kinvarra, and Oranmore, and inland at Kilmacduagh, Gort, and Ballinasloe. The inland distribution of this mollusk in Ireland seems to coincide with that of the eskers or deposits of sand and gravel which run across and dot the central counties.

Hygromia hispida L.—Common over the whole area, but never so abundant as it is in the southern and eastern counties. Var. *hispidosa*, Mousson is the prevailing form, var. *concinna* Jeff. also occurs. The var. *nana* Jeff., a well-marked, pretty little shell was taken by Lough Rea, on Church Island in L. Derg, and near Dalystown, and the white form, var. *albida* near Loughrea, Gort, Lough Cutra, and Ballinasloe. Var. *albobincta* is frequent.

H. striolata Pfeiffer. = *H. rufescens* Auct.—Abundant near Kinvarra, Oranmore, Gort, Loughrea, Portumna, Woodford, Athenry, Ballinasloe and most other towns and villages. Varies indiscriminately in colour from white to reddish-brown, and in form from flat-to round-spired. None of its habitats in S. Galway are very remote from human influence, so it is probably an alien now thoroughly established.

Acanthinula aculeata Müll.—Appears to be rare in the division, but it is easily overlooked. I have taken specimens at Coole, Loughrea, Portumna, Woodford, Garbally, and Dalystown. The spineless form, var. *sublaevis* West. occurred by the shore of Lough Derg, and on a tree-shaded wall near Portumna.

A. lamellata Jeffreys.—Very local. Plentiful in the old woods of Woodford, Derryunlam, and Coole.

Vallonia pulchella Müll.—Typical *V. pulchella* is, as throughout Ireland, rare in South Galway. I have taken it by Lough Rea and Lough Derg. In each of these localities it lives under stones and drift

timber, and at the bases of rocks in fields which adjoin the lake-shores, and are liable to winter flooding. I have seen it in similar situations in County Clare, and by a marsh in County Carlow.

The other form, *V. excentrica* Sterki, is more widely distributed, occurring at Gort, Ballinasloe, Athenry, Oranmore, Kinvarra, Kilcolgan, and other places. It is usually found under stones and on rocks in dry fields, and on banks and eskers. These two shells are regarded by many conchologists as distinct species, to me they seem to be varieties of one, their difference in shape, which seems to be the character chiefly relied on for separating them, being probably the result of environment. Intermediate forms are frequent, and it is in some cases almost impossible to decide which of the two names should be applied to them.

V. costata Müll.—Rare and local. Seen only in three localities near Portumna under stones in dry places, and on an esker at Ballinasloe. None of the specimens I have seen approach *V. excentrica* in form all have the umbilicus open and circular.

Helix aspersa Müll.—Very common. Abundant by the sea at Oranmore and Kinvarra; also on eskers and limestone rocks in many places, and in all cultivated and inhabited districts. A colony of var. *minor* was found associated with the same variety of *H. nemoralis* at Oranmore. Var. *conoidea* was taken at the same place. It does not vary much in colour, but various modifications of vars. *flammea*, *undulata*, *fasciata*, and *nigrescens* occur. Native by the sea and on the eskers and limestone crag, but possibly introduced in many of its other habitats.

H. nemoralis Müll.—This ubiquitous and beautiful species is generally distributed, and, as usual, shows great variation in size, colour, and banding. The most noteworthy forms I have collected are:—Vars. *minor*, *conica*, *compressa*, *citrinozonata*, and *roseozonata*, all at Oranmore. Vars. *carnea* and *albina* at Kilmacduagh. Var. *undulata* at Kilmacduagh, Ballinasloe, and Portumna. Var. *albolabiata* at Portumna, Woodford, Kilmacduagh, Oranmore, and Coole. Var. *luteolabiata* at Oranmore. Var. *roseolabiata* at Oranmore, Woodford, Portumna, and Coole. Var. *bimarginata* at Portumna, Woodford, Oranmore, and Kilmacduagh. A remarkable thin-shelled form, white-lipped, with band-formula 00345 is plentiful in the woods at Woodford. The apparent absence of the dark forms, vars. *castanea* and *olivacea*, which I have not seen in the district, is remarkable.

H. hortensis Müll.—This species, so rare in Ireland except in the east and centre, I have seen only in the neighbourhood of Ballinasloe, where a collection of thirty-seven specimens, all that were to be seen during a search of one hour on a hedge-topped bank on a damp evening, consisted of the following varieties:—*olivacea*, 15 specimens; *lutea-coalita* (12345), 9 specimens; *lutea* 12345, 6 specimens; *lutea* 00340, 2 specimens; *lutea* 00000, 4 specimens; and *citrinozonata* 1 specimen. At other places in the locality only the type and bandless yellow form were seen.

- Ena obscura** Müll.—This interesting species, whose Irish distribution like that of *Helix hortensis* is chiefly eastern, is very rare in Galway. I have taken it sparingly on a wall near Portumna, and under stones on a bank near Ballinasloe. In the glen at the Punch Bowl near Lough Cutra I found numerous individuals as late as October 28 (1911) resting on the trunks of beech, sycamore, and oak at various heights up to fifteen feet.
- Cochlicopa lubrica** Müll.—Generally distributed, usually of a rather small form. Var. *lubricoides* is frequent. The white form, var. *albina*, was found near Portumna.
- Caecilioides acicula** Müll.—Local and rare. Fairly plentiful on an esker at Ballinasloe. Sparingly under stones at Coole near Gort. Many specimens on caddis-cases in an outlet of Lough Brick near Loughrea.
- Pupa anglica** Férussac.—Frequent in woods and by lake shores. Plentiful in woods at Woodford, Portumna, Coole, Garbally, Dalystown, and Dunsandle. Abundant on the trunks of beech trees near Lough Cutra early in November, 1911. Under stones and rejectamenta on the shores of Loughs Derg, Rea, and Cutra, also on Church Island in Lough Derg. Var. *alba* occurs sparingly in the Woodford woods.
- P. cylindracea** Da Costa.—Abundant everywhere. Varies in size, vars. *curta* and *gracilis* frequently occur with typical specimens. Brown-lipped and edentate specimens are not uncommon. Var. *albina* was taken in Portumna demesne.
- P. muscorum** L.—A local species. Plentiful by the sea on limestone rocks at Oranmore and Kinvarra. In flood debris at Kilcolgan. Under stones in a quarry and by the canal near Ballinasloe, and by Lough Derg in Portumna demesne. Var. *edentula* is the prevailing form, typical specimens being quite rare.
- Vertigo antivertigo** Drap.—Widely distributed in marshes, and by the shores of lakes and rivers. Seen near Portumna, Gort, Loughrea, Ballinasloe, Lough Atorick, Oranmore, Kilcolgan, and many other places.
- V. substriata** Jeffreys.—Apparently rare. Taken only in woods at Woodford and Coole.
- V. pygmaea** Drap.—The commonest member of the genus, and distributed over the whole district, particularly on the limestone. On the lake shores it occurs under logs and other drift. Exceedingly abundant in the rejectamenta of the annual floods at Coole. It varies considerably in size. A rather large glossy form of this species, found by Lough Coole near Gort has been erroneously recorded as *V. moulinsiana* in the Journal of Conchology, Vol. XIII., page 318, 1912.
- V. pusilla** Müll.—Very local and rare. This little shell, though abundant as a fossil in some Irish sand-dunes, has very rarely been seen in a living state in Ireland. In 1909 I found a large colony living among loose stones on a tree-shaded wall near Portumna, associated with *Ena obscura*, *Balea perversa*, *Clausilia bidentata*, *Vallonia pulchella*, *Pyramidula rupestris* and other species. So abundant is it there that I have taken over one hundred specimens in an hour. I have also found it very sparingly among decaying leaves in a wood at Coole,

associated with *Acanthinula lamellata*, *A. aculeata*, *Hyalinia pura*, and *Pupa anglica*.

Balea perversa L.—This species, though of wide distribution, is scarce in South Galway. It occurs on walls and trees at Portumna, Loughrea, Ballinasloe, Lough Cutra, Dalystown, and Dunsandle.

Clausilia bidentata Ström.—Common on rocks, walls, and trees throughout the division, varying only in size.

Succinea putris L.—Rare and local. Fairly plentiful by the River Suck near Ballinasloe; on the bank of the river near Gort; in wet fields and in a wood at Dalystown; and sparingly in flood debris at Kilcolgan. Rather small and pale in colour in all stations.

S. Pfeifferi Rossmässler.—Widely distributed in marshes and on the margins of rivers and lakes. The small obese shell (= *S. parvula* Pascal) is the usual form seen. The form with long spire and small aperture, var. *contortula*, occurs in brackish marshes at Kilcolgan on the shores of Lough Rea, L. Derg, and L. Brick, and by the canal at Ballinasloe. This variety is considered by Mr. A. S. Kennard to be the *S. schumacheri* Andreae. The Lough Rea shells are deeply sutured and highly coloured. White specimens, var. *albida*, were taken by Lough Derg near Portumna, near Ballinasloe and at Kilcolgan.

Carychium minimum Müll.—Common in woods, marshes, and all damp places.

Phytia myosotis Drap.—By the shores of Galway Bay at Aughinish, Kinvarra, and Oranmore. Var. *ringens* in each locality with the type.

Ovatella bidentata Montagu.—Very rare; seen only near Oranmore.

Ancylus fluviatilis Müll.—Common throughout in lakes and streams. Var. *albida* in Lough Rea.

Aeroloxus lacustris L.—Rare and local. On plants in the River Suck near Ballinasloe; in the river at Gort, and in Lough Rea.

Limnaea auricularia L.—Rare. In the Shannon at Portumna Bridge. Plentiful in Lough Brick near Loughrea. In the canal at Ballinasloe. Var. *acuta* Jeffreys is the only form found in these localities, extreme forms of this variety were found at Ballinasloe.

L. pereger Müll.—Common in all waters throughout the district, varying greatly in size and form. The prevailing form is var. *ovata*, some specimens of which are fairly large. An interesting form of the var. *lacustris* Leach is abundant in Lough Rea, the shells are large and glossy, and more than half of them are pure white (var. *candida*). This seems to be a deep-water form, large quantities of the empty shells with occasionally a few containing the living animal, being cast up on the shores of the lake during storms. Other forms of var. *lacustris* occur in Lough Derg, Lough Atorick, and the Woodford river. Var. *Boissyi* near the sea at Kilcolgan.

L. stagnalis L.—A widely-distributed species. Common in all the larger lakes—L. Derg, L. Rea, L. Cutra, L. Tullaghnafrankagh, and L. Cool. Also in the Shannon and its tributaries, and in small rivers at Kilmacduagh and Oranmore. A pretty form, the var. *fossarina*

is very abundant in Lough Rea, the shell is small, rather solid, and of a purplish-grey tint. Var. *lacustris* and the white form, var. *albida*, also occur in Lough Rea.

Limnaea palustris Müll.—In marshes, rivers, lakes, and ditches throughout the vice-county. Var. *corva*, of which large specimens were taken in Lough Brick near Loughrea, is frequent. A peculiar form of a purplish-grey tint is abundant in Lough Rea.

L. truncatula Müll.—Widely distributed and found in all the districts visited, but is never abundant. Var. *elegans* was taken in a quarry at Ballinasloe and in roadside pools near Loughrea. Var. *albida* at Kilcolgan.

Amphipelea glutinosa Müll.—Very rare. In the canal at Ballinasloe I took a few specimens of the white form, var. *albida*, of this species. I have not been able to find it living elsewhere in the vice-county, but it occurs as a fossil in the Portumna marl, and in a river deposit near Ballinasloe.

Planorbis albus Müll.—Generally distributed and common in all rivers, lakes, and ditches.

P. glaber Jeffreys.—Rare and very local. Living specimens taken only in Lough Rea. Abundant as a fossil in the marl at Portumna Bridge.

P. crista L.—Apparently rare, but possibly overlooked owing to its small size. Taken in a pool near Portumna, large and some scalariform specimens; Lough Brick near Loughrea; Tullaghnafrankagh Lough near Ardahan; Lough Rea; in the River Suck and canal near Ballinasloe. Plentiful as a fossil in the Portumna marl and in the Ballinasloe river deposit.

P. carinatus Müll.—Local, but abundant where it occurs. In Lough Derg, the Shannon, and all its tributaries, including the Suck, in drains at Pollboy bog near Ballinasloe, also in Lough Rea and L. Brick. Var. *disciformis* in Lough Derg near Portumna. Var. *albida* in Lough Derg at Portumna, and in the canal at Ballinasloe.

P. umbilicatus Müll.—Generally distributed and common, frequenting marshes and ditches, apparently not associating with *P. carinatus* which prefers the clearer waters of rivers and lakes. Very large specimens occur in a bog near Ballinasloe. Var. *rhombea* in drains near Portumna.

P. vortex L.—Local and rare. In the Shannon and Lough Derg near Portumna. Abundant in the River Suck, the canal and Pollboy Bog near Ballinasloe. Plentiful in the Gort river, Lough Coole, and Lough Cutra near Gort. Also in Lough Brick and Lough Rea. Occurs as a fossil in the Portumna marl and the Ballinasloe river deposit. With the exception of the above-mentioned lakes and rivers in the Gort and Loughrea districts, all of which drain into Galway Bay, this mollusk appears, in the southern half of Ireland, to be confined to the Shannon basin. The records for other rivers in southern and eastern counties all seem to be erroneous and due to large forms of *P. leucostoma* having been mistaken for this species.

P. leucostoma Millet (= *P. spirorbis* L. Auct.).—Common, ranging over the entire vice-county. It is usually found in shallow pools, drains,

and sluggish streams, but sometimes occurs in the shallow margins of large lakes, as at Lough Cutra and Lough Coole. White specimens were taken at Coole and Portumna. This species has hitherto been recorded by British and Irish conchologists under *P. spirorbis* L., but in a recent paper (*Irish Nat.*, 1914, p. 131) Mr. A. W. Stelfox has given reasons why the two should be separated. I have not seen the true *P. spirorbis* in South Galway.

P. contortus L.—Generally distributed. In rivers, lakes, and ditches at Oranmore, Athenry, Ballinasloe, Woodford, Loughrea, Kilmacduagh, Coole, Lough Cutra, Portumna, and other places. Var. *albida* Jeffreys occurs in Lough Rea. Fossil in the Portumna marls.

P. fontanus Lightfoot.—Rather rare. Taken in Lough Rea, Lough Brick, pond at Ballyshrule, drains at Portumna and the River Suck at Ballinasloe. Var. *albida* has been taken in Lough Rea. Fossil in marl at Portumna Bridge.

Physa fontinalis L.—Common in rivers and lakes throughout the division, usually of small size.

Aplecta hypnorum L.—Local and rather rare. Taken in pools and ditches which are usually dry in summer near Loughrea, Portumna, Ballinasloe, Dalystown, Dunsandle, and Lough Brick. Fossil in river deposit near Ballinasloe.

Paludestrina Jenkinsi Smith.—Local. Exceedingly abundant in the river at Gort, associated with *Limnaea palustris*, *Planorbis vortex* and *Acroloxus lacustris*, the water here being quite fresh, and fully eight miles from tidal influence, the river running for the last few miles of its course underground, and mingling directly with the sea-water through limestone rock at Kinvarra Bay. In Lough Coal and two other small lakes near Kinvarra; these little lakes are at a considerable distance from the sea, but sea-water enters them during high spring-tides through subterranean passages. Carinate and ecarinate forms occur in each station.

P. stagnalis Baster.—Very common along the seashore from Aughinish to Oranmore.

Bithynia tentaculata L.—Common in rivers, lakes, and ditches throughout the area. The white form var. *albida* is frequent, occurring in Lough Rea, L. Derg, L. Brick, L. Atorick, and in the canal at Ballinasloe.

Bithynia Leachi Sheppard.—The canal at Ballinasloe is the only habitat known for this mollusk in South Galway. Outside the Royal and Grand canals it has been recorded for Ireland only from the River Barrow near Graiguenamanagh. I recently found a single specimen with other drift shells in the Shannon at Limerick showing that it probably lives somewhere in that river or in the local canal.

Valvata piscinalis Müll.—Generally distributed and common, occurring in nearly every river and lake. Specimens from Lough Derg have been identified by Mr. A. S. Kennard as var. *alpestris* Blauner, and this appears to be the prevailing form. Elongated and sub-scalariform specimens were found at Kilmacduagh and Ballinasloe. Pure white specimens occur rarely in Lough Derg and Lough Rea.

- Valvata cristata** Müll.—Common throughout, occurring in practically all waters. It is one of the most abundant fossils in the marls. Var. *alba* was taken near Kinvarra.
- Acicula lineata** Drap.—Very rare. Seen only in woods at Portumna and Castle Taylor. Var. *alba* with the type in each locality.
- Neritina fluviatilis** L.—Local. Abundant in Lough Rea and Lough Derg. Common in the Shannon, the Suck, and Diniry rivers; also in the canal at Ballinasloe. Vars. *cerina* and *nigrescens* in Lough Rea and Lough Derg. Vars. *trifasciata* and *undulata* are frequent.
- Anodonta cygnea** L.—Local and rare. In the Shannon at Portumna Bridge and in the canal at Ballinasloe. I have been informed that it occurs also in a small lake a few miles from Portumna, but have not been able to verify the statement.
- Sphaerium corneum** L.—Frequent and generally distributed. Abundant in Lough Rea, Lough Derg, Lough Atorick, and most rivers and large ditches. Var. *nucleus* occurs in L. Rea and in ditches near Portumna. A pure white form was taken in Lough Rea and L. Cutra.
- S. lacustre** Müll.—Very rare and local. Taken only in the Shannon at Portumna Bridge, and in a drain in the demesne at Portumna.
- Pisidium amnicum** Müll.—Local and rare. In the Shannon at Portumna Bridge; the Diniry river; River Suck and canal at Ballinasloe; sparingly in Lough Rea and, a thin-shelled, fragile form in a mill-pond at Woodford. Fossil in the Portumna marls and in the river deposit at Ballinasloe.
- P. henslowanum** Sheppard.—Locally abundant in the River Suck at Ballinasloe.
- P. subtruncatum** Malm.—Frequent in lakes, rivers, and canal. Lough Rea, Ballinasloe, Portumna, Kilmacduagh, and L. Tullaghnafrankagh.
- P. pulchellum** Jenyns.—Lough Rea, L. Derg, L. Tullaghnafrankagh, and in a stream at Kilmacduagh.
- P. casertanum** Poli.—Lough Rea, L. Alee near Woodford, L. Tullaghnafrankagh, near Ballinasloe, and very large specimens in a roadside drain near Loughrea.
- P. obtusale** Pfeiffer.—In a drain near Portumna. Near Ballinasloe, and in Lough Alee near Woodford.
- P. nitidum** Jenyns.—Lough Rea, L. Tullaghnafrankagh. Near Ballinasloe and Oranmore.
- P. pusillum** Gmelin.—Lough Rea, L. Atorick, L. Alee, L. Tullaghnafrankagh, and in a stream near Kilmacduagh.
- P. personatum** Malm.—Lough Rea, canal at Ballinasloe, and drain near Portumna.
- P. milium** Held.—Lough Rea, L. Derg, L. Alee, L. Tullaghnafrankagh, bog near Ballinasloe, and drain near Portumna.
- P. hibernicum** Westerlund.—Lough Tullaghnafrankagh near Ardahan on a caddis-case.
- P. Steenbuchi** Müll.—Lough Rea.
- P. Lilljeborgi** Clessin.—Lough Rea, L. Atorick, L. Alee, and in bogholes near Ballinasloe.

Ashburton, Cork.

REVIEW.

BOTANY FOR BEGINNERS.

Junior Botany. By F. CAVERS, D.Sc., F.L.S. London: W. B. Clive, 1915.
Pp. 288. Price 2s. 6d.

The number of books on elementary botany must be almost legion, and still they come. According to its preface the special object of the present one is simplicity of treatment and avoidance of overmuch detail. The book is divided into two parts: Section I. being an introductory course in physics and chemistry, and constituting rather less than one-fourth of the book, while Section II. deals with elementary botany.

There are probably others besides the present reviewer who would doubt the advantage of including the subject-matter of Section I. in a book of this kind. The author himself appears to feel his limitations in the matter, owing to want of space; and seeing that there is no lack of books serving to give a good elementary introduction to physical and chemical science it might have been better to rely on one of them rather than attempt a necessarily limited treatment of them in a book on botany.

After a general account dealing with the principal parts of the flowering plant, succeeding chapters take up the study of the seed and germination, nutrition, respiration, transpiration, the structure and functions of the leaf, root, and stem, as well as growth, movement, and adaptation. These matters are dealt with largely from an experimental standpoint, and it is a welcome and commendable feature of the book that the long-standing divorce between morphology and physiology is replaced by the more sensible hand-in-hand treatment.

The last four chapters dealing with the general characters of the vegetative organs, flowers and their work, fruits and seeds, and some families of flowering plants, remind one, perhaps, of the more old-fashioned botany, where terms are described or families diagnosed, and examples given to illustrate them. Even here, however, the paragraphs devoted to methods of pollination and seed dispersal tend to relieve much that would otherwise be rather dull.

It seems a great pity that a chapter or two could not have been devoted to a study of plants in the field, showing their relations to each other, and to their various environments, the more so seeing that the author is pre-eminently fitted to deal with this side of plant life. The inclusion of such matter would more than compensate for the total suppression of Section I. But the book is based unfortunately upon syllabuses, which explains much, although in justice it must be said that, for those who must be bound down by such things, without doubt it succeeds in its aim, and will be found valuable.

In his preface the author appeals for corrections or criticisms which might serve to improve the book if a further edition is called for. Had he asked for suggestions of a wider nature we should have liked to advise him to burn his syllabuses and give us an elementary book on botany out of his own heart, as a teacher.

G. H. P.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Patas Monkey from Mr. T. K. Laidlaw, a pair of Rabbits from Mrs. Dowling, a Peregrine Falcon from Mr. C. F. Stewart, and a Jay from Mr. G. E. Low. A Puma cub has been born in the Gardens. The musical performances given on Wednesday afternoons during the summer by the excellent band of the South Irish Horse have attracted many visitors on fine days.

DUBLIN NATURALISTS' FIELD CLUB.

JULY 10TH. EXCURSION TO THE GLEN OF THE DOWNS.—Eleven members and visitors, leaving Westland Row at 1.28, started on cars from Greystones and drove to the Glen of the Downs. The President acted as conductor in the much regretted absence of Mr. Gunn, who, though prevented from joining the excursion, had made all the previous arrangements. Favoured by fine weather and a remarkable absence of flies the Club found the wooded slopes of the glen full of interest, the flora being almost exclusively that of undisturbed native woodland. On the banks of the little stream at the foot, however, *Mimulus guttatus* was flowering plentifully. This American colonist does not seem to have been previously recorded from this station, but has probably been there for about ten years. Walking back towards Greystones, the party noticed near Delgany a few plants of *Ceterach officinarum*, probably in the spot where it was seen by Mr. Praeger in 1893 (*Ir. Top. Bot.*). Most birds, except the persistent Chiffchaff, had ceased singing, but a few cones that had evidently been opened by Crossbills were found under a Scotch Pine. No evidence of the recent presence of Squirrels was observed, though it is well known that these animals frequented the neighbourhood not long ago. After tea at Greystones the party took the 6.45 train back to Dublin.

BELFAST NATURALISTS' FIELD CLUB.

MAY 29.—LISNAGADE and LOUGHBRICKLAND.—Fifty members and their friends left by the 10.50 a.m. train for Banbridge. On arrival there the party drove to Lisnagade, where the first portion of the time was spent in examining the various raths by permission of Mr. Wm. Taggart. The earth-works are all in very perfect condition, and form an interesting monument.

After lunch the party rejoined the brakes and proceeded to Aghaderg Glebe, where they were most hospitably entertained to tea by Canon and Mrs. Lett. Those present had an opportunity of inspecting the many rare and interesting botanical specimens collected by their host. In addition to above, the botanical members collected during the day *Rosa arvensis*, *Ceterach officinarum*, *Melampyrum pratense*, *Myosotis versicolor*, *Ophioglossum vulgatum*, *Galium erectum*, as well as many other common species. The zoologists were also busy, and made collections in several groups of invertebrates, which will subsequently be worked out and

recorded. Before leaving Aghaderg a short business meeting was held, at which seven new members were elected. Afterwards the party drove to Banbridge, returning by 5.45 train to Belfast.

JUNE 19.—GAWLEY'S GATE AND SELSHAN.—Forty-two members, under the conductorship of W. J. C. Tomlinson, visited Gawley's Gate and Selshan. The party travelled by rail to Lurgan, and then on cars to their destination, situated on the east shore of Lough Neagh, and six miles north of Lurgan. The lake shore and adjoining marshes and bogs at Selshan were more easily accessible than usual owing to the long continued drought of the preceding weeks. The main interests of the excursion were botanical, as the district is a notable one on account of the number of plants very rare locally which are recorded therefrom. A number of these, however, had not been seen for over half a century, and some were believed to be extinct, through drainage and other causes. Two of these supposed extinct species were found in considerable profusion.¹ One of them, *Rhamnus catharticus*, was found in quantity, and in full flower, in the shrubby wood on the lough shore at The Hogg, on the west side of Selshan harbour. The other, *Lathyrus palustris*, occurred plentifully in two places in the marshy meadows on the shore, just west of Selshan bridge. Two Carices, *C. elongata* and *C. filiformis*, recorded by Dr. Moore from this locality were searched for without avail. *C. stricta*, however, occurred in large tussocks, and *C. Goodenowii* in plenty. The former has not been noted from Selshan before. *C. canescens* was found in an adjacent bog, growing in proximity to *Osmunda regalis*. In addition to these, the more uncommon plants noted were:—*Thalictrum flavum*, *Viola canina*, *Apium inundatum*, *Cicuta virosa*, *Chaerophyllum temulum*, *Oenanthe fistulosa*, *Lysimachia Nummularia*, *Veronica scutellata* and *Scirpus maritimus*. The Adder's-tongue fern was got on the Derrymore side of the bay, and *Aspidium aculeatum* on the Hogg Park side. *Galium erectum* was noted on the homeward journey on the roadside bank near Kilmore House, an additional Co. Down record. *Galium boreale*, recorded from the lake shore at Gawley's Gate, was not seen. The same remark applies to *Lobelia Dortmanna*, and some other aquatic rarities.

Forty species of birds were observed during the day. The most interesting ornithological observation consisted in the recognition of a Turnstone (it is probable there were three or four of them) on the boulder clad shore, just north of Hogg Park Point. This bird is usually regarded in this country as a winter visitant, but has been noted by the sea coast in small numbers occasionally throughout the summer, and had been observed at Lough Neagh in the month of May, 1902. The dry weather conditions caused the collection of invertebrates to be rather meagre. Four species of Terrestrial Isopods were noted, but these included one—*Porcellio pictus*—which is not regarded as common. The Spiders, Harvest men, Myriopods, &c., when worked out may possibly yield some interesting discoveries.

¹ It is worthy of note here that at Portmore, a fortnight later, Messrs. Tomlinson and Foster found *Sium latifolium*, another of the missing Lough Neagh plants.—Eds.

The members re-united at Selshan Cottage in the evening for an open air tea, and subsequently returned to Lurgan, where they entrained for town.

JULY 3.—SCRABO HILL.—Although the weather conditions were very unfavourable about twenty members entrained with the 1.35 p.m. for Newtownards station, whence they walked to the hill. On the way a visit was paid to the well-known nurseries of Messrs. Dickson, where by the courtesy of the firm the members had an opportunity of inspecting many interesting plants. Upon reaching the more immediate object of the excursion the remainder of the afternoon was spent in examining the geological and botanical features of the district. The extensive quarries in Triassic sandstone with their well-known volcanic sills and dykes. afforded specially favourable opportunities for the geological section of the Club, and although no new items of interest were recorded by the botanists the members of this section were also well repaid for their exertions. Upon the return journey a short business meeting was held, Mr. Adam Speers, B.Sc., in the chair. Three new members were elected to the Club, after being duly proposed and seconded.

CORK NATURALISTS' FIELD CLUB.

FEBRUARY 24.—The Club met at University College, Prof. SWAIN, President, who occupied the chair, gave a short address on "Seismograms, and what they tell us." J. NOONAN, who delivered an address on "Field Club Work in Co. Cork," first sketched the attempts made to catalogue the flora and fauna of the county. Botanists who have written on the flora are Dr. Charles Smith in his "History of Cork" (1750), James Drummond, Curator of the Cork Botanic Gardens (1818-20), Dr. Thomas Power (1843) and Rev. T. Allin (1883). Dr. Power's list of plants, and lists of the fauna of the county by Dr. J. R. Harvey and J. D. Humphreys, were presented to the British Association on its visit to Cork in 1843. The papers were published in one volume by the Cork Cuvierian Society in 1845. The number of species of flowering plants in the county, has been given by Drummond, Power, and Allin, respectively, as 710, 885, and 694. Mr. Allin regarded many of Dr. Power's records as not being properly authenticated. Reference was made to the chapters on local flora, fauna, and geology, by N. Colgan, R. A. Phillips, A. G. More, R. J. Ussher, and G. H. Kinahan, in Smith's "History of Cork" (Guy's edition). Details of work which might be undertaken by the Club, were given by the lecturer, *e.g.*, the compiling of a list of the galls of the county and their inhabitants. It was pointed out that the north of the county offers a field for the naturalist which has been only partially worked. The lecture concluded with an exhibition of lantern slides showing places visited on Club excursions.

The members then visited the Crawford Observatory. Here Prof. Swain showed and explained the seismograph, and members had an opportunity of viewing the sky under the guidance of H. Lund,

MAY 3. ANNUAL GENERAL MEETING.—Prof. Swain in the chair. The Hon. Secretary (Jas. Noonan) read the twenty-third annual report which showed the membership to be 27. The statement of accounts submitted by the Hon. Treasurer (Wm. B. Lacy), showed a balance in favour of the Club of £11 3s. 4d. In accordance with notice of motion, Prof. Swain proposed that a grant of £5, from the Club funds, be made to the Cork Soldiers' and Sailors' Refreshment Committee. J. C. Rowe seconded the motion, which was passed unanimously.

The following officers and committee were elected for 1915-16 :—
 PRESIDENT, Prof. Swain; VICE-PRESIDENTS :—Prof. Hartog, T. Farrington, M.A.; W. H. Johnson, H. Lund, R. A. Phillips; HON. SECRETARY, J. Noonan; HON. TREASURER, W. B. Lacy; COMMITTEE :—Miss M. E. Bergin, Miss B. E. Duke, B.Sc., Miss M. Dobbin, B.Sc.; M. Holland, R. Blair, D. J. O'Mahony, F.C.S.

MAY 19. EXCURSION TO KILCREA.—A party of members, led by M. Holland, travelled from Capwell station, to visit Kilcrea Abbey and Castle.

JUNE 9. VISIT TO UNIVERSITY COLLEGE.—A large party assembled in the new Honan Biological Institute, over which the members were shown by Prof. Swain, who also delivered a short lecture on geology. Proceeding to the College buildings, the members were received by the President, Sir Bertram Windle, who fully explained the College scheme for the archæological survey of Munster. An adjournment to the President's house followed, when his private archæological collection was exhibited. Having seen the collection, the members were entertained to tea by Lady Windle. After tea, a vote of thanks to the President and Lady Windle was proposed by M. Holland and seconded by J. Noonan. Sir Bertram Windle having replied, a pleasant function terminated.

DUBLIN MICROSCOPICAL CLUB.

JUNE 19.—The annual excursion of the Club was held at Bohernabreena, ten members driving by way of Rathfarnham and Firhouse to the grounds of the Rathmines Waterworks to which access was kindly granted by the township authorities. The day was beautifully fine and the gravel cliffs clothed with trees, and the rich vegetation of the lake and river tank in Glenasmole showed to great advantage. The young larches by the upper reservoir were found to be largely covered with colonies of Chermes. Instead of concluding the day's outing with the customary Club dinner a special collection was made for the benefit of Irish prisoners of war in Germany.

NOTES.

ZOOLOGY

Bees and Colour Selection.

I have lately seen an interesting instance of the preference which bees collecting honey or pollen show for flowers of a particular colour. In one of the example beds of the Trinity College Botanic Gardens there are two clumps of *Oxalis*, planted so closely that their flowers partly intermingle—*O. floribunda* with pink, and *O. valdiviana* with yellow flowers.

On July 15th both clumps were covered by a host of bees, chiefly workers of *Bombus hortorum* and *terrestris* with a few Hive-bees. Although I watched them for half-an-hour I saw few cases of bees collecting indiscriminately from blossoms of each colour. Where such occurred, it was done by the Hive-bees alone. Occasionally a *Bombus* collecting from the yellow or pink flowers would alight on an adjoining flower of different colour, only to fly off at once, apparently to the nest.

On July 18th I captured and marked two bees, workers of *B. hortorum*, from the yellow clump. After a lapse of twenty minutes I noticed one of the marked bees on the pink clump, collecting industriously, but carefully avoiding every yellow flower. Some time passed, and I was leaving the spot when I suddenly noticed both my bees at work on the yellow flowers, and on them alone. Both had evidently twice visited the nest, subsequent to the marking, and appeared to confine their attentions to a flower of uniform colour at each trip. The marking was done by removing a circular patch of the upper abdominal pubescence with a fine scissors.

The rule of restricting attention to one class of flower, by colour, on each working trip, though adhered to by *Bombus*, was not so carefully followed by *Apis*. It may be that this protected, winter-fed, semi-domesticated insect has undergone a weakening of certain primal instincts which still govern its wilder brethren; but the effect of this instinct in limiting cross-fertilization was very well illustrated, at least in this instance.

One cannot generalize from a particular observation, but what I noticed would seem to confirm Mr. Delap's view as to the wider choice exercised by the Honey-bee (*Irish Naturalist*, vol xxii, p. 120), and is somewhat at variance with Mr. Moffat's claim for the superior discriminating power of *Apis* ("Bees and Flowers," *Ibid*, p. 65).

H. E. CUTHBERT.

Anglesea Road, Dublin.

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This Magazine—founded in 1871—is devoted to the publication of Original Matter relating to the Natural History of Scotland, and includes Papers contributing to the elucidation of the Fauna, Observations on Life Histories, etc., and Notes recording the occurrence of uncommon species and other useful and interesting facts.

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NOTICE.

CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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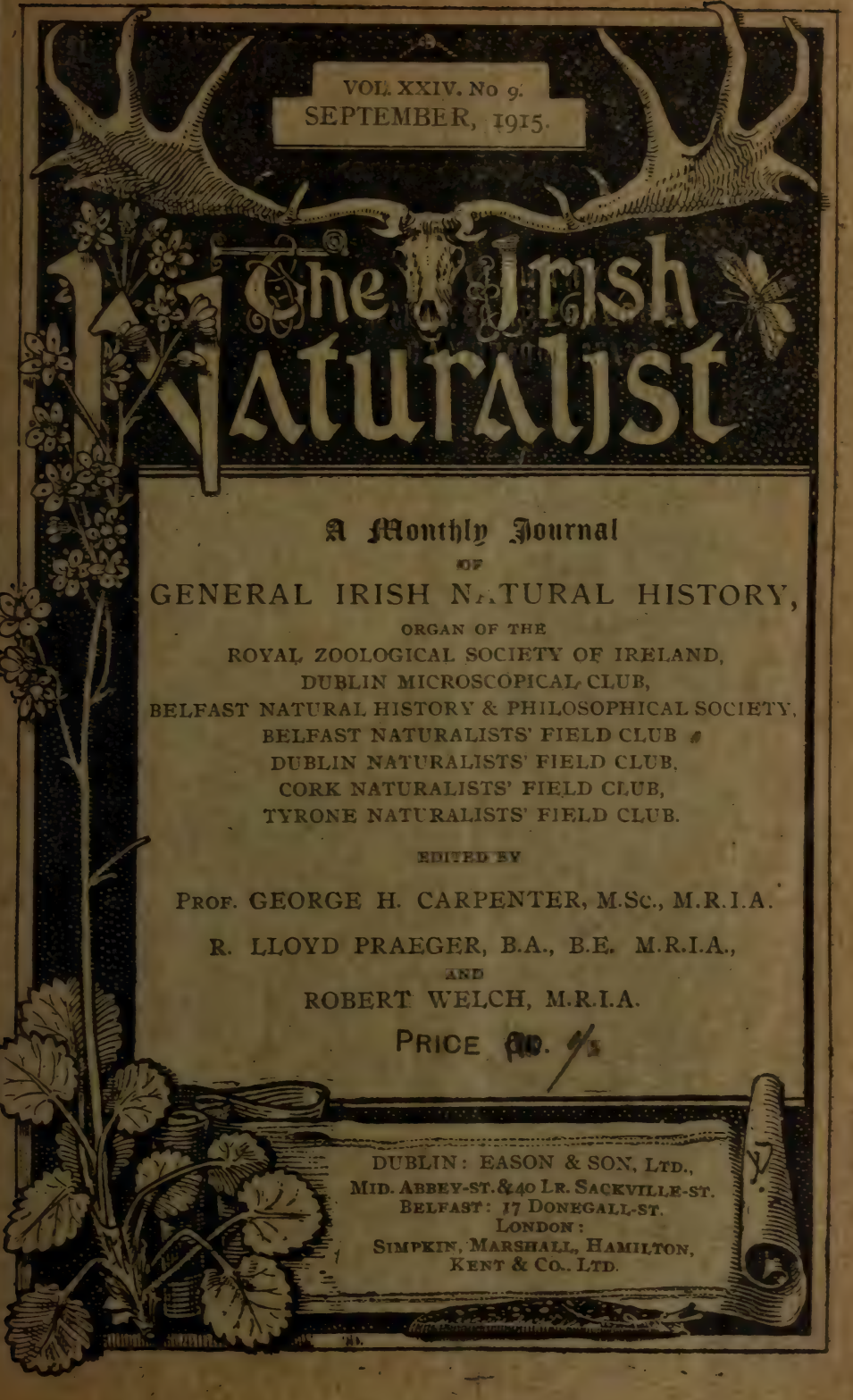
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SOME RECENT RECORDS OF IRISH INSECTS.

BY J. N. HALBERT, M.R.I.A.

The following notes of Irish insects refer to records which have appeared in leading British entomological magazines during the last five years. These magazines are the *Entomologist's Monthly Magazine*, the *Entomologist*, and the *Entomologist's Record*. Amongst the Lepidoptera three species are additions to the known Irish fauna, the most interesting being *Leucania Loreyi*, an insect of great rarity in the British Isles. There are at least fifteen new Irish records of Coleoptera, the greater part of these were discovered by Mr. Tomlin and Dr. Joy during a visit to the south-west of Ireland.

LEPIDOPTERA.

The result of two seasons' collecting amongst the butterflies of the Curragh district is the subject of a short paper by Lt.-Col. Manders' in the *Entomologist*. Only nineteen species were met with or considerably less than half the number recorded from Ireland. The writer comments on the unfavourable weather conditions more especially on the large number of dull, cloudy days "which follow each other with the most distressing regularity." The butterflies were found within a five miles' radius of the barracks. By far the best locality lies about two miles east of the Curragh "a small stretch of broken, hilly country, covered with furze and bracken, and on the top is a venerable earth work, known as Knockaulin, covering some acres." The more interesting butterflies found in the district are the Brimstone, *Gonopteryx rhamni*, of which only a single specimen occurred; the Wood White, *Leucophasia sinapis*, locally common; Col. Manders' observations thus extend eastward the known range of these two species. The Greasy Fritillary, *Melitaea aurinia*, is described as locally abundant, and from a batch of caterpillars of this species found at Knockaulin the author "bred a series which

¹ *Entomologist*, xlv. (1913), p. 292.

comprised all the described Irish forms, and not a few of the British." It is to be regretted that the names of the varieties actually collected were not definitely recorded, for a general remark of this kind is not satisfactory. It would be interesting to know, for instance, if the true aberration *hibernica* described by Birchall, was met with. In his "Lepidoptera of Ireland" Mr. Kane gives good reasons for the belief that it is really a very local form in this country. A similar remark is made concerning specimens of the Large Heath, *Coenonympha typhon*, of which a few were caught "on the one favourable day and in the same acre of bog." Only three specimens of the Peacock Butterfly, *Vanessa io*, were seen, and the Dark-green Fritillary, *Argynnis aglaia*, was locally common. The absence of two or three common species such as the Red Admiral, *Vanessa atalanta*, is noteworthy.

While on the subject of Curragh insects we may refer to the capture of a Death's-head Moth, *Acherontia atropos*, by Mr. Stoneham¹ on the road leading from Newbridge to the Curragh during October; and the same gentleman reports the capture of a second specimen,² in a very worn condition, found running about on the deck of a steamer shortly after leaving Queenstown. This fine moth is not infrequently found at sea. There is a specimen in the Irish National Museum caught at the Coningbeg Lightship, off the coast of Wexford, and there is also a very fine specimen caught last year at Eagle Island lighthouse, Co. Mayo.

Mr. Bicknell³ records a few Lepidoptera from the district lying between Birr (King's County) on the north, and Nenagh (Tipperary) on the south, a locality which has been but little examined by entomologists. Amongst butterflies he records the Wood White, *Leucophasia sinapis*, in considerable numbers; the Greasy Fritillary, *Melitaea aurinia*, "is apparently more plentiful in some years than in others," there is no mention of the particular forms frequenting the locality; and the Green Hairstreak, *Thecla rubi*. A

¹ *Entomologist*, xlv. (1913), p. 334.

² *Entomologist*, xliii. (1910), p. 316.

³ *Entomologist*, xliii. (1910), p. 120.

few kinds of moths are also recorded, including the hawk-moth *Chaerocampa porcellus*, and the beautiful *Plusia bractea*, both were captured flying to the flowers of Valerian.

A useful list of the Pug Moths, belonging to the genus *Eupithecia*, occurring in county Fermanagh has been published by Mr. J. E. R. Allen.¹ Twenty species were found, some of which had not been previously noticed in the locality. Amongst the less common species are *E. plumbeolata*, not common; *E. pygmaeata*, a few specimens; *E. trisignaria*, caterpillars found on *Angelica sylvestris* in September; *E. virgaureata*, very abundant in May and again in July and August; hundreds of caterpillars were found on Ragwort, but a number of these were "stung" by ichneumon flies; others found feeding on Golden-rod were much less infested, and produced larger moths; *E. dodoneata* is abundant, and two specimens of *E. togata* were found in 1909. The last is said to be an introduced species a result of the planting of Spruce in Ireland.

A recently described moth, *Hydroecia crinanensis*, Burrows, closely allied to the common Antler Moth, *Hydroecia nictitans*, has now been reported from various localities in Ireland. Mr. Burrows² records its capture by Colonel Partridge at Enniskillen; and a melanic form of it is recorded from near Londonderry³; while a third specimen "from Wicklow" has been recently found⁴ in Mr. Tutt's collection, showing that the species is widespread in this country.

A reference to Commander Gwatkin-Williams' discovery of the extremely rare Moth *Leucania Loreyi* at Queenstown has already been given in the *Irish Naturalist* (vol. xxi., p. 245). It was originally recorded by Mr. G. F. Mathew⁵ in the *Entomologist*.

There are hardly any new records of Irish Microlepidoptera. Mr. E. R. Banks⁶ mentions the occurrence of *Monopsis*

¹ *Entom. Record*, xxiv. (1912), p. 33.

² *Entom. Record*, xxii. (1910), p. 117.

³ *Entomologist*, xliii. (1910), p. 293.

⁴ *Entom. Record*, xxiv. (1912), p. 78.

⁵ *Entomologist*, xliii. (1910), p. 351.

⁶ *Entom. Mo. Mag.*, xlviii. (1912), p. 39.

crocicapitella, Clms., in the counties Dublin and Sligo, apparently the first definite record of the species from Ireland.

Judging by the numbers of Irish butterflies and moths recently exhibited at meetings of the London entomological societies, collectors still think it worth their while to visit this country in search of specimens. Apart from rare and local species it is well known that many of our commonest insects are of great interest from the standpoint of variation. As an example one may refer to a note by Mr. Mathew¹ commenting on the great variability in a series of specimens of the common moth *Odontopora bidentata* bred from eggs laid by a Cork specimen. The caterpillars were reared to maturity, and the resulting moths were very varied "hardly one of them being typical, and there were some very beautiful forms amongst them." No less than six of the more remarkable are briefly described by Mr. Mathew.

At a meeting of the South London Entomological Society, Mr. L. W. Newman² exhibited a series of Lepidoptera captured in counties Cork, Kerry, and Clare, including very light examples of *Aplecta nebulosa*, very dark *Luperina cespitis*, *Aphantopus hyperanthus* with a greenish shade on the underside, and bred specimens of *Dianthoecia capsophila* and *D. luteago* var. *Barrettii*. No information is given of the markings of the last-named species which is the very local Howth *Dianthoecia*. Very probably Mr. Newman's specimens are the same as the distinctly-marked grey form discovered a few years ago by Major Donovan on the Cork coast. At the November meeting Commander Gwatkin-Williams³ showed females of the common Meadow Brown, *Epinephele janira*, with banded hind wings; a *Cidaria* which may possibly be *C. concinnata*; *Xanthorhoë montanata* with band obsolete; *Anthocera trifolii* with confluent spots, and female specimens of the Orange-tip *Euchloe cardamines*, with ochreous hind wings.

At the annual exhibition of varieties held by the same society, Mr. Newman⁴ showed "a large selection of specimens

¹ *Entomologist*, xlvii. (1914), p. 132.

² *Entom. Mo. Mag.*, i. (1914), p. 19.

³ *Entom. Mo. Mag.*, i. (1914), p. 45.

⁴ *Entom. Record*, xxvi. (1914), p. 265 and 269.

bred from Irish parents" including the Green-veined White, *Pieris napi*, with very dark and yellow markings; brilliant blue females of the Common Blue, *Polyommatus icarus*; *Hipparchia semele*, very pale examples; and *Neuria reticulata* in which the usual dull ochreous colour is replaced with a pink suffusion, these were bred from caterpillars found in county Cork. Dr. Cockayne exhibited and described gynandromorphous specimens of the Common Blue, *P. icarus*, found in the counties Sligo and Clare.

COLEOPTERA.

Amongst the beetles there is a list of 343 species collected by Mr. Tomlin¹ and Dr. Joy at Cloghane, a little-known spot on the north shore of the Dingle peninsula. The list contains many additions to the fauna of Kerry which is now better known than that of many of our other Irish counties. Considering that the visit was made in the spring time the authors are to be congratulated on their success, though it also accounts for the absence of many summer insects. It is pointed out that the following species and varieties are additions to the "List of Irish Beetles" published² in 1902.

- Pterostichus cupreus* var. *affinis* Sturm.
- Hydroporus melanarius* Sturm.
- Ochthebius viridis* Peyr.
- Mycetoporus longicornis* Kr.
- Homolota malleus* Joy.
- Philonthus keysianus* Sharp.
- Homalium rugulipenne* Rye.
- Hister bissexstriatus* F.
- Coccinella xi-punctata* var. *brevifasciata* Weise.
- Micropeplus caelatus* Er.
- Cryptophagus pallidus* Sturm.
- Longitarsus gracilis* var. *Poweri* All.

It may be mentioned, however, at least two of these, the *Ochthebius* and the *Homalium*, have been previously recorded from Ireland; the *Homolota* and *Philonthus* have

¹ *Entom. Mo. Mag.*, l. (1914), p. 214.

² (*Proc. R. I. Acad.*, ser. III., vol. vi.)

been described since the appearance of the "Irish List." The ground beetle *Carabus clathratus* occurred not uncommonly under stones on the top of turf walls, a very usual locality for this fine insect.

Mr. J. Edwards¹ writes of the small ground beetles belonging to the genus *Notiophilus* concerning which there is a tendency to revive some of the species formerly recognized by Waterhouse and other entomologists. An interesting mountain form of *Notiophilus hypocrita*, found by the writer of these notes on the summit of Slieve Donard (2,796 feet), on Salt Lough Mountain (about 1,500 feet) in Donegal, and on Achill Island, is described as a new aberration (*ab. hibernicus*). The type form of *N. hypocrita* has been found on the summit of Croaghpatrick, and there is a specimen from the top of Carrantuohill (Kerry) in the Haliday collection.

In an interesting paper on the distribution of the ground beetle *Carabus clathratus* Mr. Morley² endeavours to confute the records of its occurrence in England. One is strongly inclined to agree with him that the ancient record from Norfolk, where it is said to have been found as long ago as 1809, and a still more dubious record from Suffolk, are in all probability founded on error. This handsome ground beetle is well known as a Scotch species though the records from that country are less numerous than are those from the western parts of Ireland. The various Irish localities in which it has been found are mentioned by Mr. Morley.

Amongst other notable records to be referred to are *Stenus oscillator*, Rye,³ found by Mr. Bullock at Killarney, this is an extremely rare beetle, and it has not been noticed since it was described by the late E. C. Rye from a single British example, now in the British Museum. Mr. Bullock has also found amongst moss at Killarney a very unusual form of *Hydrothassa marginella* in which the reddish-yellow margins are wanting. Mr. Champion⁴ says he has never seen an

¹ *Entom. Mo. Mag.*, xlix. (1913), p. 70.

² *Entom. Mo. Mag.*, l. (1914), p. 97.

³ *Entom. Mo. Mag.*, xlix. (1913), p. 88.

⁴ *Entom. Mo. Mag.*, l. (1914), p. 246.

example thus coloured. Apparently, however, specimens with obscured yellow margins are not uncommon in Ireland. The writer of these notes found, in the Mullingar and Enniscorthy districts, forms in which the pale margins are replaced by a dark purple colour. Dr. G. W. Nicholson¹ records some rare beetles amongst which are a few Irish species, most of these have already been mentioned in his valuable papers in the *Irish Naturalist*.

Mr. W. E. Sharp² writes of a few species of the genus *Lathrobium* and refers to the occurrence in Ireland of the variety *atripalpe* Scriba of *L. terminatum*. In this country it is the prevalent form, known by the unspotted wing-cases and darker-coloured legs. It is usually recorded under the name of variety *immaculatum* Fowler.

The following beetles are now to be added to the known Irish fauna:—*Helophorus ytenensis*, an aquatic species recently described by Dr. Sharp, specimens were found in the North of Ireland by Mr. Balfour Browne, they are "rather larger and more robust than those found here, and the legs and palpi are a little shorter." It may be known from the allied species by its broad, abbreviated wings. *Anisotoma curta* Fairm. a rare British species of which a single specimen was taken by Rev. W. F. Johnson³ on Bent-grass at Mullaghmore on the southern side of Donegal Bay (Co. Sligo); and *Homolota malleus*,⁴ Joy, a new species of the composite *volans* group of the difficult genus *Homolota*, it is recorded from "England and Ireland, probably common." Mr. Cameron's capture⁵ of another species, *Homolota picipennis*, Mann., at Rathmullan in Donegal has already been referred to in the *Irish Naturalist* (1913, p. 41).

Excellent figures of two of our characteristic Irish beetles, *Bembidium argenteolum*⁶ and *Otiorrhynchus auro-punctatus*⁷ have been published in the *Entomologist's Monthly*

¹ *Entom. Record*, xxiv. (1912), p. 168.

² *Ent. Record*, xxiv. (1912), p. 259.

³ *Entom. Mo. Mag.*, xlviii. (1912), p. 287.

⁴ *Entom. Mo. Mag.*, xlv. (1910), p. 280.

⁵ *Entom. Mo. Mag.*, xlv. (1910), p. 280.

⁶ *Entom. Mo. Mag.*, xlv. (1910), Plate I.

⁷ *Entom. Mo. Mag.*, xlv. (1910), Plate IV.

Magazine. The former is a Lough Neagh insect, and the latter has its headquarters on the coasts of Dublin, Meath, and Louth; neither of them have been found in Great Britain.

HYMENOPTERA.

Mr. Claude Morley¹ gives a short account of the *Ichneumon* flies of the Haliday collection of Hymenoptera, now in the possession of the Irish National Museum. This part of the collection has been recently arranged by Mr. Morley, and he has been successful in discovering many type specimen of the species described by Haliday. As the great majority of the specimens are unlabelled this is a valuable improvement in the collection, and greatly enhances its value for future reference.

A verification of Mr. Morley's remark that the females of *Ichneumon lugens*, Grav., "are said to pass the winter in the perfect state" is supplied by Rev. W. F. Johnson² who has found this ichneumon hybernating under loose birch bark in Carr's Glen near Belfast.

A paper by Mr. H. K. Donisthorpe³ on the ants of the genus *Myrmica* contains lists of Irish localities, sufficient to show that the species are widely distributed, though in the case of *Myrmica lobicornis* there is but a single Armagh record.

A beautiful coloured figure⁴ of the parasitic bee *Psithyrus distinctus*, Perez, appears in the *Entomologist's Monthly Magazine*. Mr. Sladen remarks that the specimens from which these figures were made "were bred at Dover in a nest of *Bombus lucorum* from a female sent me by Mr. H. L. Orr from the neighbourhood of Belfast." This handsome bee is no doubt fairly common in the north of England, in Scotland, and in the north of Ireland, and it is probably parasitic on the Bumble Bee *Bombus lucorum*.

¹ *Entomologist*, xlv. (1913), p. 259.

² *Entom. Mo. Mag.*, xlviii. (1912), p. 91.

³ *Entom. Record*, xxv. (1913), p. 1, &c.

⁴ *Entom. Mo. Mag.*, xlix. (1913), Plate II.

DIPTERA.

Amongst the two-winged flies there is little to record. Mr. J. E. Collin¹ states that the fly *Tetanocera robusta*, Lw., is really distinct from the allied *T. ferruginea*, Fln., of which it has been regarded as a variety, and remarks that he has seen Irish specimens. He also records² *Minettia trispina*, Rnd., found by Colonel Yerbury at Waterville and Glenbeigh in the south-west of Ireland. There is also a reference³ to the capture of the distinct little fly *Lophosia fasciata*, Meigen, at Parknasilla.

ODONATA (Dragon-flies).

Mr. K. J. Morton⁴ records an interesting visitor in the large African dragonfly *Hemianax ephippiger*, Burm., an example of which was found at rest amongst grass at Herbert Park by Master Albert Douglas in October, 1913. Mr. Morton kindly identified the specimen, and it proves to be the second recorded capture of this species in the British Isles, the first was at Devonport in February, 1903. Swarms of this insect visit the south of Europe from time to time, and stragglers occasionally find their way north and west.

Mr. Morton⁵ has also been examining numbers of Scotch and Irish examples of the common dragonfly *Sympetrum striolatum*, and records what he has termed "an Atlantic race" of this species characterized by the darker femora and more pronounced marking of the mid-body as compared with the typical English form. Although the Irish specimens are not quite so strongly marked they closely resemble those caught in the western parts of Scotland. A similar form was described from Madeira by De Selys many years ago.

National Museum, Dublin.

¹ *Entom. Mo. Mag.*, xlv. (1910), p. 129.

² *Entom. Mo. Mag.*, xlix. (1913), p. 171.

³ *Entom. Mo. Mag.*, xlix. (1913), p. 171.

⁴ *Entom. Mo. Mag.*, l. (1914), p. 16.

⁵ *Entomologist*, xlvii. (1914), p. 1.

ON IRISH ANIMAL NAMES.

BY NATHANIEL COLGAN, M.R.I.A.

In the first of a series of interesting and suggestive papers on Irish native animal names contributed by Dr. Scharff to the *Irish Naturalist* for March last (*supra* p. 45) the writer asks for criticism "from others interested in obtaining the correct names." As these papers are bound to stimulate research in a branch of inquiry to which the scientific mind, the mind of the natural history student as distinguished from the mind of the popular folk-loreist, has but seldom been directed, I feel tempted to offer a few remarks here, not so much by way of criticism of Dr. Scharff as of exposition of the peculiar difficulties which beset the subject.

At the very outset it is necessary to make our minds clear as to the precise meaning to be given to the words "correct name" in this connection; for plain though the expression may seem to be it is by no means devoid of misleading implications. If it be maintained that the correct native name of an Irish animal is the name fixed by long-established literary usage, then we must forego all hope of ever arriving at the truth as regards perhaps a majority of Irish animal names. Many of them are quite unknown in literature. Many others which have appeared in literature either occasionally or frequently in one or other of the dialects of the language have never attained to literary predominance in any. Others, again, having at one time won a more or less secure position in literature are now become mere linguistic fossils.

If, on the other hand, the correct name of an animal be some name unknown in literature yet current in the still surviving vernacular folk-speech of Ireland, then the question immediately presents itself, which of the many names for one and the same species contemporaneously in use in the Irish dialects is to be preferred above the others? For the fact must never be lost sight of that folk names in Irish, as in all languages, have often but a limited geographical extension. A mountain range, a river or an arm of

the sea may serve as a linguistic no less than a biological barrier. Where an animal has been long and generally domesticated or is wide-spread and distinguished by some conspicuous character we may find, no doubt, one name, with more or less of phonetic modification, applied to it throughout our Irish-speaking districts. But the number of such species is small; and for the majority of animals, as for the majority of plants, it remains true that the name changes, and often quite rapidly, with change of locality. To take at random an instance from the folk nomenclature of plants current in the English shires, no less than 35 distinct names are given for the Common Arum in Britten and Holland's "*Dictionary of English Plant Names.*" As Professor Earle well expresses it, "the sphere of these homely native names is very narrowly limited; the number of names that can be used with a certainty of being understood is astonishingly few."¹

The more consideration one gives to this subject the more inevitably is one forced to the conclusion that all names in use by common consent over a fairly large area, say, as a minimum, over a parish, should be regarded as correct, and that it is the rule rather than the exception that one and the same animal or plant should have several names, all equally correct though differing widely in extension. In the present state of the Irish language and literature the subject of animal and plant names is, in fact, a branch of folk-lore, a thing to be studied in the field rather than in the closet; and the task which lies immediately before the worker in this department is the making of local lists. It is only by the multiplication of such lists that we can determine whether an animal name is general or local or obsolete or current, whether a given animal has one name or several, or whether the same name is in different districts applied to different animals. The production of a trustworthy local list makes large demands on the caution no less than on the patience and skill of the collector. The difficulties are the same in kind though not in degree as those encountered by

¹ *English Plant Names from the Tenth to the Fifteenth Century.* Clarendon Press, Oxford, 1880.

the collector of native plant names. Animals are usually mobile, while plants are fixed, so that your peasant informant may far more readily be confronted with the subject of your inquiry when it is a plant than when it is an animal.

In the hope that some readers of the *Irish Naturalist* may be induced by Dr. Scharff's papers to take up this most necessary field work I venture to set out here some of the precautions to be taken. In the first place, select as your informant a country man or woman who has no tincture of literature; otherwise, you may find yourself put off with book-names instead of folk-names. Next, be sure that your informant has been reared, or if possible born and reared, in the district where you are working. More than once I have filled a page of my note-book with interesting plant names only to find when I had finished that my informant was an immigrant from a distant county who had carried with him his county plant names. Again, never accept a name as fully ascertained unless given to you in the presence of the animal named. In all cases get confirmation of the name from several authorities in the district, checking your first result by inquiring not for the name of the animal, but for the animal corresponding to the name already obtained. Finally, where the name appears to be obscure as to sound or meaning or both take down carefully in phonetic rendering the name or names given by each of your informants. From one or other of these forms, or, perhaps, from a dialectic form found to prevail in some other and far removed district, a ray of light will often glimmer through what at first may have seemed impenetrable darkness. Your knowledge of spoken Irish may be slender, but this need not deter you from taking up the work, though it should impress upon you the necessity for caution. As old Thomas Fuller said when he set out to write an account of Wales, a country which he had never seen, "it matters not how meanly skilled a writer is so long as he hath knowing and communicative friends." So if you are more at home in zoology than in modern Irish you will no doubt find some friendly hand to help you over the linguistic stiles which are certain to obstruct your path.

In Dr. Scharff's last paper, dealing with Irish bird names (*supra* p. 109) it will be seen that under the headings "Bunting," "Grouse" and "Pipit" doubts are expressed as to the accuracy of certain items in my "Gaelic Plant and Animal Names" which forms part iv. of the Clare Island Survey Reports¹ and was published in 1911. The names to which exception is here taken occur not in the paper to which they are credited by the reference (3), but in the list of Bird Names given in the Addenda published in 1915. This list, as appears from the introductory paragraph, is entirely the work of Professor O'Neill and the late Mr. R. J. Ussher, authorities of acknowledged eminence in their respective provinces, the Irish language and Irish ornithology, and my connection with it is merely that of a communicator of information received from a trustworthy source.

Sandycove, Co. Dublin.

NOTES.

BOTANY.

Plants of Ben Lettery.

On pp. 269-270 of "Letters from the Irish Highlands of Cunnemarra," London, 1825—there is a very circumstantial account of the ascent of Ben Lettery near Ballynahinch, and mention is made of some plants to be found on this mountain. The writer, when describing the climb, says: "At one time a carpet was actually spread under our feet of the trailing arbutus (*a uva ursi*) with its red stalk and bright red berries, the club moss (*lycopodium selago*) and the black-berried heath (*empetrum nigrum*). We showed him, too, the Alpine ladies' mantle (*achemilla alpina*) and the London-pride (*saxifraga umbrosa*)." The person referred to as "him" was, we are told, a "botanist and a stranger" who accompanied the party. I do not know who wrote the "letters," but as *Achemilla alpina* has never been found in Galway or Mayo since Wade, in his "Plantae Rariores," 1804, reported it from Maamturk and rocks at Cong—the writer of the above "Letters" must have fallen into the same error as his predecessor, a mistake repeated by his successor the author of the "Irish Flora" published in 1833, though Mackay in his "Systematic Catalogue of Rare Plants found in Ireland," 1806, makes no reference to this locality for *Achemilla alpina*.

RICH'D. M. BARRINGTON.

Fassaroe, Bray.

¹ *Proc. R. I. Acad.*, vol. xxxi.

The Bee Orchis in Co. Donegal.

Rev. A. H. Delap writes to Dr. Scharff that he found a Bee Orchis (*Ophrys apifera*) on June 24, at Coolmore, on Donegal Bay, and that Mr. Hugh Allingham, of Ballyshannon, informs him that he obtained a specimen of the same plant at Wardstown, four miles south of Coolmore, some years ago. This beautiful Orchid has not previously been found in Donegal. It is in Ireland strongly calcicole, ranging north-west across the Central Plain to Sligo, Fermanagh and Monaghan. It is interesting to have it now recorded from southern Donegal, where the Carboniferous limestone finds its extreme limit.

Dublin.

R. LLOYD PRÆGER.

Deyeuxia neglecta var. *Hookeri*.

A friend has just sent from Norfolk specimens of *Deyeuxia neglecta* identical with the var. *Hookeri* of Lough Neagh. In fact it looks more like *laponnica* than Moore's original *Hookeri* did.

ARTHUR BENNETT.

Croydon, Surrey.

Trichomanes radicans and *Asplenium lanceolatum* in Co. Carlow.

On December 14th, 1913, while snail-hunting in a wood in Co. Carlow, I was agreeably surprised to meet with an overhanging, dripping rock, the underside of which was covered with a luxuriant growth of the rare and beautiful Killarney Fern (*Trichomanes radicans*). The rhizomes were over three feet in length and some of the fronds, in fruit, measured from twelve to fourteen inches.

On July 4th, 1915, I found *Asplenium lanceolatum* growing plentifully in a bohereen near Gowlin, at the foot of Blackstairs. The fronds varied, according to the situation in which they grew, from three to twelve inches in length.

These interesting plants are additions to the flora of District III. of "Cybele Hibernica" as well as to that of Co. Carlow. The only previous Irish records for *Asplenium lanceolatum* are from Cork and Kerry.

R. A. PHILLIPS.

Ashburton, Cork.

ZOOLOGY.

Recent Notices of Irish Birds.

The following are the titles of some recent notices of Irish birds:—
"Occurrences of Common and Black Redstarts at Light-stations in Ireland" (R. M. Barrington in "British Birds," June, 1915, pp. 23-25);
"Aquatic Warbler on Migration obtained on Tuskar Rock" . . .

(Prof. C. J. Patten in "Zoologist," March, 1915, pp. 81-92, plate 1); "Late Stay of Fieldfares in North of Ireland" (W. H. Workman, *Ibid.*, July, p. 271); "Notes on the Tree-Sparrow in Donegal" (Rev. J. M. M'William, *Ibid.*, August, pp. 297-302).

The Basking Shark.

In the June number of this Journal I alluded to the fact that the Basking Shark Fishery had been abandoned because this species has become less common in Irish waters. From the notes now furnished me by Mr. F. W. L. Keane of Youghal, it appears that the Basking Shark in certain districts at any rate is on the increase. Although practically unknown in Ardmore Bay before 1912 altogether ten specimens were killed during the past three years in this neighbourhood varying in length from 13 to 24 feet. All these were captured in Salmon nets, and Mr. Keane states that they have caused so much damage to the nets that the fishing industry had to be practically abandoned. Many more of these Sharks have been seen in the bay without being caught. Whether any use was made of the oil contained in the liver I did not ascertain, but this is unlikely as I am not aware of any facilities existing on the south coast of Ireland for extracting the oil. If it should be ascertained that a general increase in the numbers of this fish has taken place in Irish waters it may perhaps be possible to resuscitate the long-lost Irish industry of the Basking Shark Fishery.

R. F. SCHARFF.

Dublin.

Bees and Colour Selection.

I am very glad that Mr. Cuthbert has been making such interesting and valuable notes on this subject, and I am glad that he bears me out so well in regard to the general accuracy with which both Hive and Humble Bees stick to one kind of flower during a journey; though I see that he differs from me in regarding the Hive-Bee as somewhat less exact than its wilder brethren, whereas I have generally found the Humble-Bees more prone to error than Apis. This is a point on which further observation may possibly alter either Mr. Cuthbert's opinion or my own. His notes on the marked bees are particularly suggestive as tending to prove that it is an actual practice with these insects, though limiting themselves during a journey to one kind of flowers, to change to another after each visit to the nest.

I would like, however, to raise the question whether Mr. Cuthbert's observations really point to "colour selection," or whether "species selection" would not be the happier term. The flowers at which he watched his bees working differed in colour, but they also differed in other respects, though not, perhaps, very widely. Can we be sure that the workers of *Bombus hortorum* which distinguished so well between pink flowers of one species (*Oxalis floribunda*) and yellow flowers of another (though allied) species (*C. valdiviana*) would have distinguished with like

skill between pink-flowered and yellow-flowered plants of exactly the same species? The latter feat would be the true proof of colour discrimination; and it was this sort of discrimination that struck me as so remarkable in the Hive-Bee when I watched its operations at the wall-flower-bed as detailed in my paper on "Bees and Flowers." The wall-flowers were all of one species, differing from one another in nothing but colour, and even the colour-differences were not by any means so marked as that between pink and yellow; yet each bee confined itself to one of the three colour-varieties represented—plain brown, plain yellow, or brown and yellow streaked.

I have not yet got conclusive proof that any species of *Bombus* will regard distinctions of colour where no other difference presents itself in the flowers the bee is visiting. I have seen *B. agrorum*, when working at Milkwort, transfer its attention with seeming indifference from pink to blue and from blue to pink—showing, on the one hand, that it had enough botanical acumen to recognise the specific identity of these flowers in spite of a conspicuous difference in their colours, and, on the other hand, that the difference in colour did not seem to this bee a matter of practical importance. Its action might almost have suggested doubts as to whether it saw the colour difference at all; but as I once saw a bee of the same species visit 24 flowering spikes of blue milkwort in succession, neglecting pink, I cannot suppose that the colour sense is absent, though its teachings are so often disregarded.

This summer I have been particularly interested in watching another of the yellow bees, *Bombus distinguendus*, at a spot much frequented by it, where it busied itself during July in collecting honey from bramble-blossoms. Two forms of bramble, plainly though perhaps only sub-specifically distinct, abound in this patch of ground, and are closely intermingled. I will hazard no guess at their names, but one has large showy blossoms of a rosy pink hue, while the petals of the other are small, narrow, and of a very dull or almost greenish white. With strange perversity, *Bombus distinguendus* sticks to the dull whitish flowers and leaves the bright pink ones alone. I can almost imagine the indignation of a "lumping" botanist at the idea of a bumble-bee discriminating in this way between two forms of the "Common Blackberry." I suppose the only explanation he could suggest would be that *Bombus distinguendus* has some preference for white over pink as a colour. But for my part I do not think the bee distinguishes these plants by their colour at all! At any rate, I have several times seen an individual bee dart straight to one of the big pink blossoms as though to gather from it, but when almost in contact with the flower it would discover it had made a mistake and dart away again. Surely, if it saw the flower a foot away, it did not need to come within half an inch before discovering that it was pink, not white. It must either have seen that fact at the first, or not have minded it at the last stage. I can only conclude that some other difference than that of colour determines the discrimination shown by this species of *Bombus*—at any rate with regard to brambles.

C. B. MOFFAT.

Ballyhyland, Co. Wexford.

Notes on Lepidoptera.

The first butterfly to appear here in the spring was as usual *Vanessa urticae*, which I saw on the wing on March 9th, but not till April 17th did I observe any other species, when *Pieris rapae* and *Pavarge egeria* made their appearance, and on 22nd of that month I saw *Euchloe cardamines* flying along the roadside at Jerrettspass. A good many moths flew to my sitting-room window and into the room, attracted by the lamp light. On March 16th I took *Cerastis vaccinii* in this way. I had taken it freely at ivy in the autumn, but this was the first time I had met with it after hybernation. During April the *Taeniocampae* were about and I took *T. stabilis*, *T. instabilis* and *T. gothica*, also *Xylocampa lithorrhiza*, *Anticlea badiata* and *Coremia multistrigarea*, and on May 10th *Lozogramma petrarea*, the last named I had not met with here before. On May 22nd I took at a short distance from Poyntzpass a small specimen of *Euchloe cardamines*, a male measuring 32m.m. in expanse of wings. I took a similar form many years ago in one of my own fields. In June my friend, Mr. W. A. Hamilton, J.P., sent me several specimens of *Ino statice*, which he had taken on his lawn at Coxtown, Co. Donegal. They are smaller than specimens I have from Wexford, and of a deep blue colour instead of green. *Zygaena lonicerae* and *Z. filipendulae* were plentiful in early July in hay fields where an abundant crop of *Lotus corniculatus* had given provender for their larvae. On July 22nd I took in one of my own fields a nice specimen of the beautiful little moth *Trycheris aurana* Fb. a species I had not met with before.

W. F. JOHNSON.

Poyntzpass.

Dascillus cervinus at Poyntzpass.

In June as I was hunting for insects in a wood here where a number of trees had been felled, I met with two specimens of *D. cervinus*; both were on bramble leaves. I was somewhat surprised to meet with it here, as I had previously met with it on high ground, but I see that Canon Fowler, "British Coleoptera," vol. iv., says that it occurs on brambles and alders as well as on flowers of Umbelliferae.

W. F. JOHNSON.

Poyntzpass.

A Large Eel.

I was recently shown an eel which had been caught by a boy in a small stream near here. It was weighed and proved to be $4\frac{1}{2}$ lbs. in weight. Unfortunately I did not measure it, but should judge it to have been 3 feet or $3\frac{1}{2}$ feet long. The stream in which it was taken is quite small and shallow, and it seems strange that so large a specimen should have made its way up it.

W. F. JOHNSON,

Poyntzpass.

ON THE DISTRIBUTION OF THE SYMPHYLA IN IRELAND AS AT PRESENT KNOWN.

BY NEVIN H. FOSTER, F.L.S., M.R.I.A.

By some zoologists the Symphyla are regarded as an order of the Class Myriopoda, whilst others consider them as worthy of Class rank.

Prior to the present year only one species, *Scutigerella immaculata*, had been noted in Ireland, but during the past few months I have collected some of these animals, among which are four additional species—*Scutigerella biscutata*, *S. spinipes*, *Symphylella delicatula* and *Scolopendrellopsis subnuda*. The specimens have been submitted to Mr. R. S. Bagnall, F.L.S., who has identified them, and for his kind assistance I now tender my thanks.

As a basis for further work in this group, a list of the species is appended with (so far as known to me) the localities in which they have been found.

***Scutigerella immaculata* (Newport).**

Kerry S., Great Blasket ; Galway W., Gentian Hill ; Dublin, Lambay ; Louth, Kilanny and Carlingford ; Fermanagh, South shore of Lough Erne ; Armagh, Poyntzpass ; Down, The Spa (Ballynahinch), Hillsborough, Cultra and Banbridge ; Antrim, Glenshesk (Ballycastle).

***S. biscutata* (Bagnall).**

Louth, Carlingford (*vide* p. 104 *ante*) ; Armagh, Poyntzpass ; Down, The Spa (Ballynahinch) and Banbridge ; Antrim, Portmore and Glenshesk.

***S. spinipes* (Bagnall).**

Armagh, Poyntzpass ; Antrim, Portmore and Glenshesk.

***Symphylella delicatula* (Bagnall).**

Armagh, Poyntzpass.

***Scolopendrellopsis subnuda* (Hansen).**

Antrim, Murlough Bay.

The specimens of these hitherto unrecorded species from Ireland have been deposited in the National Museum, Dublin.

Hillsborough, Co. Down.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include three Black Mangabeys from Mr. T. K. Laidlaw, a Mona Monkey from Mr. T. A. Finch, Peafowl from Sir F. Heygate and Miss May, Pigeons from Gen. Beatty and Mr. T. E. Mills, and a Blue-fronted Amazon from Mr. W. S. Colles. A Roseate Cockatoo has been received on deposit.

Three Lion cubs—a male and two females—have been born in the gardens, the parents being "Red Hugh" and "Fiona."

BELFAST NATURALISTS' FIELD CLUB.

JULY 10-14.—EXCURSION TO BALLYCASTLE DISTRICT.—A party of twenty-four left Belfast under the leadership of N. H. Foster and R. J. Welch, on Saturday, the 10th. Two more members joined at Ballycastle. From the hotel, brakes conveyed the party to Fair Head, the inland road being taken. *En route* the ruins of Bun-na-Margie Abbey—the ancient burial-place of the clan MacDonnell—were passed. The party was conducted along the summit of the cliff, across the outlet from Lough Doo, and downwards towards the stream issuing from Lough-na-Cranagh, from which a somewhat slippery path bordered by the Grass of Parnassus (now in full flower) gave access to the road at Colliery Bay, whence the party, remounting the brakes, returned to the hotel. For Sunday there was no fixed programme. Some of the party devoted the forenoon to the woods and flint gravels in Glenshesk, where also owls' pellets were collected, and the afternoon to Plantation Port, at Kinbane Head; others paid a visit during the day to Bun-na-Margie Abbey and to the camp of the Inniskillings on the Ballycastle Heads. Bright sunshine favoured the party on Monday in their exploration of Whitepark Bay. The profusion of bloom on the "Flower of Dunluce," *Geranium pratense*, which here grows in wild luxuriance, was admired. After lunch the members were led from Portbraddan round the base of the limestone cliffs, tenanted, as usual, by a large nesting colony of House-martens, to the sandy shore. On reaching the kitchen-middens active search was prosecuted for relics of ancient man. A fine series of photos of flint implements, &c., sent by William Gray, M.R.I.A., and a number of the implements themselves brought by R. Welch, greatly aided the party in their search. Proceeding

eastwards the members reached "Ballintoy Rocks," curious sea stacks and arches showing clearly the effects of rapid marine erosion in finely columnar basalts, these being the results of local volcanic action through the Chalk and Plateau basalts. The party thence walked to the coast-guard station, where the brakes were waiting and the return drive was commenced. Ballycastle was reached by way of Ballintoy village, where a pleasant cup of tea was served shortly before seven o'clock. Tuesday, which was showery, was devoted to the exploration of Murlough Bay. The collectors ascended the glen in search of rarities—botanical and zoological—for which the place is justly famed. Others visited the great rock-talus and old coal mine adits at Fair Head. The fine pot-holes on the Carboniferous Sandstones at the Cottage also claimed attention. At 6.30 the return journey was commenced. After dinner at the hotel the customary business meeting was held—R. J. Welch presiding. A cordial vote of thanks was passed to Mr. William Gray for his courtesy and kindness in sending the photos of flint implements, &c., for the instruction of the members. Robert Walsh Mussen having been elected a junior member, the proceedings terminated. By the 10.30 train on Wednesday morning the members left Ballycastle. Some time must elapse ere the scientific results of the excursion can be ascertained. The specimens collected from the kitchen-middens at Whitepark Bay will doubtless afford a basis for many an argument as to the age to which they should be referred. Among the more interesting plants noted were *Geranium pratense* and *Orchis pyramidalis*, at Whitepark Bay; *Orobancha rubra* and *Lastrea aemula*, at Murlough Bay; whilst *Asplenium marinum* was seen in both these localities. At least eight or nine species of Myxomycetes (Mycetozoa) were taken. During the four days fifty-four species of birds were observed, but in the domain of ornithology a most interesting discovery was made in the finding of a colony of Tree-sparrows (*Passer montanus*) nesting on one of the North Antrim cliffs. In woodlice nothing new to the district was seen, but it is worthy of note that a large colony of one of our rarer species, *Haplophthalmus Mengii*, was observed in Murlough Bay. Good collections of some other invertebrates were obtained, details of which will duly be published in the Club's Proceedings.

JULY 24.—INCH ABBEY.—A party of thirty-five members and friends, conducted by Robert May, travelled by the 1.50 train to Downpatrick. A walk of about three miles from Downpatrick, on a road which leads through the beautiful meadows of the Quoile, brought the party, now augmented by other members and friends, to Inis-Cumhscraigh. This Cistercian house was founded in the twelfth century beside an older Celtic foundation, still used as a graveyard. Great interest was taken in the many beautiful architectural features revealed by the recent excavations. The botanists and zoologists of the party found the low marshes and the river's edge happy hunting grounds, and many important finds were made and noted. The party having now returned to Downpatrick, visits were made to the cathedral and St. Patrick's grave. After tea at the Down Hunt Arms Hotel a short business meeting was held, Joseph Maxwell, J.P., in the chair.

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EDITED BY

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CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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THE CLARE ISLAND SURVEY.

BY R. F. SCHARFF, PH.D., B.SC.

THE study of animals and plants of every country, of every district, and of every island offers problems of complexity and interest. But islands and their animal and plant inhabitants possess quite a special attraction for the naturalist. They differ strikingly as a rule in their fauna and flora from the nearest portion of the mainland. How came the animals and plants there at all? What were their means of conveyance? Why should so many species which flourish on the mainland be absent from islands? These and many other questions of biological interest are raised by the study of an island fauna and flora; and it is for this reason that so much attention has been devoted by eminent naturalists to the scientific investigations of islands. Darwin made a special study of the Galapagos Islands and the origin of their animals and plants. Wallace's famous *Island Life* treats of the subject from a wider aspect, and as the author aptly remarks islands offer the best subjects for the study of the distribution of animals and plants. The importance of this research has also been recognised by the Government in so far as that the Trustees of the British Museum have been permitted to publish at public expense a full account of the exploration of Christmas Island.

Stimulated by the gratifying results obtained by the exploration of Lambay, which is situated near Dublin, a small body of naturalists decided in 1908 that efforts should be made to organise a biological survey of one of the islands lying off the west coast of Ireland. Clare Island was selected as the most suitable for that purpose, and it was resolved to do the work thoroughly and to include if possible a geological survey of the island.

It was a formidable undertaking, for large funds were needed, workrooms and accommodation on the island had to be established, investigators had to be induced to travel

to the island and remain on it for some time, and finally the results of their observations had to be collected and published. Here was an opportunity for an organiser who feared neither trouble nor worry. The committee, having no remuneration to offer for such a post, were not overwhelmed with applicants. Indeed everyone felt that the only available man capable of carrying out such a task was Mr. Praeger. When the situation was offered to him he cheerfully accepted the onerous duties connected with it, although enough work had been laid out to fill up entirely his leisure hours for the next four years. It was soon decided that the scheme at first proposed by the committee was not comprehensive enough and that the opportunity should not be lost of producing a printed record of a survey far surpassing anything that had hitherto been attempted. The enlarged scheme included not only a biological and geological survey of Clare Island. It was to embrace the history and archaeology of the island, its place- and family-names, the Gaelic plant and animal names, the climate, as well as the fauna and flora of the surrounding seas and the opposite part of the mainland. All this increased the original scope of the undertaking enormously, but the committee succeeded in raising the necessary funds by applying to the Royal Irish Academy, to the British Association, the Royal Society of London, and the Royal Dublin Society. Private donors also helped generously.

Assistance from specialists in all branches of zoology and botany was imperative, and one of the most gratifying results of the committee's efforts was the generous response to their appeal from naturalists who lived far from the scene of operations. Thus Sir Henry Hawley, Mr. Cotton, Mr. Wallis Kew, Mr. Scourfield, Mr. Rousselet, Mr. Dunkerly, Mr. Heron-Allen, Mr. Earland, Mr. Wailes, Miss Lister and Miss Lorrain Smith travelled from London to Clare Island, some of them several times. Professor West came from Bradford, Mr. Morley from Newmarket, Mr. Carleton Rea from Worcester, Mr. James Murray from Edinburgh, Dr. Tattersall from Manchester, while Mr. Eugène Penard braved even the long journey from

Geneva to place his valuable services at the disposal of the committee.

Field work in the area, which now included far more than Clare Island, was opened at Easter in 1909 and continued until the autumn of the year 1911. The real investigation of all the spoils gathered during those three years then began. All the investigators who had helped in the great survey were busy people. They had plenty of other work to do, and many of them would gladly have escaped the drudgery of writing long reports on their observations. For three years more Mr. Praeger was kept working away at full pressure, harassing his victims and editing the manuscripts as they came in. They were published in three parts aggregating over 2,000 pages of print.

It is worthy of mention that not a single accident or hitch occurred during the whole time the survey took place. The parties had to be conveyed to and from the island in open boats, across very exposed waters, and many parts of the island are precipitous and dangerous for explorers.

The following members of the Survey contributed reports (forming volume xxxi. of the *Proceedings of the Royal Irish Academy*). The President and Council of the Royal Irish Academy were among the first to recognise the value of these researches. They have earned the special gratitude of all naturalists by ordering these reports to be printed and published. These reports can be procured separately from the Royal Irish Academy, 19 Dawson Street, Dublin.

PRAEGER, R. LL.—General Introduction and Narrative.

WESTROPP, T. J.—History and Archæology.

MACNEILL, JOHN.—Place Names and Family Names.

COLGAN, N.—Gaelic Plant and Animal Names.

WILSON, JAMES.—Agriculture.

LYONS, W. J.—Climatology.

HALLISSY, T.—Geology.

FORBES, A. C.—Tree growth.

PRAEGER, R. LL.—Phanerogamia and Pteridophyta.

LETT, Canon.—Musci and Hepaticae.

REA, CARLETON, AND H. C. HAWLEY.—Fungi.

SMITH, ANNIE LORRAIN.—Lichenes.

COTTON, A. D.—Algae (Marine).

- WEST, WILLIAM.—Algae (Freshwater).
 BARRETT-HAMILTON, G. E. H.—Mammalia.
 SCHARFF, R. F.—Reptilia and Amphibia.
 FARRAN, G. P.—Pisces.
 USSHER, R. J.—Aves.
 FARRAN, G. P.—Tunicata and Hemichorda.
 COLGAN, N.—Mollusca (Marine).
 STELFOX, A. W.—Mollusca (Land and Freshwater).
 MORLEY, CLAUDE.—Hymenoptera.
 GRIMSHAW, P. H.—Diptera.
 KANE, W. F. DE V.—Lepidoptera.
 HALBERT, J. N.—Neuroptera.
 JOHNSON, W. F. and J. N. HALBERT.—Coleoptera (Terrestrial).
 BROWNE, F. BALFOUR.—Coleoptera (Aquatic).
 HALBERT, J. N.—Hemiptera.
 CARPENTER, G. H.—Orthoptera and Apterygota.
 JOHNSON, W. F.—Chilopoda and Diplopoda.
 CARPENTER, G. H.—Pycnogonida.
 BERESFORD, D. R. PACK.—Araneida and Phalangida.
 MURRAY, JAMES.—Arctiscoida.
 KEW, H. WALLIS.—Pseudoscorpiones.
 HALBERT, J. N.—Acarinida.
 FARRAN, G. P.—Decapoda.
 TATTERSALL, W. M.—Schizopoda and Cumacea.
 TATTERSALL, W. M.—Amphipoda and Isopoda (Marine).
 FOSTER, N. H.—Isopoda (Terrestrial).
 FARRAN, G. P.—Entomostraca (Marine).
 SCOURFIELD, D. J.—Entomostraca (Freshwater).
 SOUTHERN, R.—Archannelida and Polychaeta.
 SOUTHERN, R.—Oligochaeta, Gephyrea, and Hirudinea.
 ROUSSELET, C. F.—Rotifera (excl. Bdelloida).
 MURRAY, JAMES.—Rotifera (Bdelloida).
 NICHOLS, A. R.—Polyzoa.
 SOUTHERN, R.—Nemathelminths, Kinorhyncha, and Chaetognatha.
 SOUTHERN, R.—Nemertinea and Platyhelminths.
 NICHOLS, A. R.—Echinodermata.
 STEPHENS, JANE.—Coelenterata.
 STEPHENS, JANE.—Porifera.
 DUNKERLY, J. S.—Flagellata and Ciliata.
 LISTER, GULIELMA.—Mycetozoa.
 HERON-ALLEN, EDWARD and ARTHUR EARLAND.—Foraminifera.
 WAILES, G. H., and EUGÈNE PENARD.—Rhizopoda and Heliozoa.
 FARRAN, G. P.—Notes on Marine Plankton.
 SOUTHERN, R.—Marine Ecology.
 PRAEGER, R. LL.—General Summary.

The assistance of Mr. Robert Welch, of Belfast, whose beautiful photographs adorn some of the pages

of the volume, was especially welcome. All these sixty-seven reports contain matter of biological or general interest. Some of them are more complete than others, yet they all may be described as good reports. To discover new species of animals and plants was not one of the main objects of the scheme. Nevertheless the survey has led to the discovery of an astonishing number of new forms of life, especially among the more obscure and less known groups.

Among the 8,488 species described, no less than 120 plants and animals proved to be new to science. Two new families and fifteen genera had to be created in the course of the work connected with their classification, and one of the genera bears the appropriate name "*Praegeria*."

The additions which have been made to our knowledge of the fauna and flora of Ireland and of the British Isles are surprisingly large. The reports record the occurrence of 343 species of animals and 55 plants not previously detected within the Britannic area; while as regards Ireland, 1,253 animals and 585 plants are added to the fauna and flora of our island.

Many of the reports are models of thoroughness and of painstaking work. Mr. Cotton's paper on the Marine Algae is not only the most complete enumeration of the Seaweeds of a single region which has been published, but the large ecological section of his report represents pioneer work in that comparatively new study. His very complete results were only obtained by means of visits to the district made at all times of the year, winter as well as summer, and by very carefully organized field-work.

Mr. Praeger's report on the Flowering Plants, which is, like Mr. Cotton's, one of the longest contributions to the series, is occupied largely with a full discussion of the dispersal power of plants, with special reference to dispersal across a barrier such as that offered by the channels which divide Clare Island from the mainland. Mr. Praeger recognises that from the time when man began to till the ground and became a keeper of flocks, his influence upon the native flora made itself seriously felt. By the importation of cattle,

sheep, horses, pigs, and fowls many seeds must have been conveyed from the mainland to Clare Island. Sacks of seed potatoes and oats, boat loads of hay, timber, furniture and foodstuffs of all sorts enabled many seeds to cross the bay. On the other hand, a certain number of native species were probably destroyed in the course of ages through man's farming operations.

The whole flora of Clare Island has thus been modified as the result of man's influence. The fauna must certainly have been affected in a similar manner; and yet in his general summary (p. 8) Mr. Praeger only alludes to three possible agencies of dispersal across the barrier of sea, viz., the sea itself, the wind, and flying animals. As regards the transport by means of surface drift or sea currents, he shows clearly that the bulk of the Clare Island flora could not have reached the island in that manner. His chapter on the conveyance of seeds by wind is one of the most excellent and original pieces of work contained in the Clare Island volume. On one of the stairways of the Royal College of Science he tested the rate of fall of a large variety of seeds, and was thus enabled to demonstrate that the plume seeds are better adapted for wind-dispersal than either the wing seeds or powder seeds. He also points out that a seed with a high index of efficiency, during a favourable gale, blowing at the rate of fifty miles per hour, could traverse the distance from the mainland to the island in six minutes; but during that short time its fall would amount to 216 feet. This, he says, represents the height to which the seed must be raised by a lucky preponderance of upward gusts over downward ones if it is to cross the channel safely. According to these calculations, seeds with a lower index of efficiency for wind dispersal would have very little chance of being blown across to the island. Similar experiments on the wind dispersal of mollusks or wingless insects have not been conducted, but what has been done by Mr. Praeger enables us to form a sound judgment as to their chances of being transported to Clare Island in that manner.

With regard to the question whether seeds might have

been conveyed to Clare Island by birds, he brings forward some new and valuable observations of his own. Altogether he arrives at the conclusion that birds have played an important role in the dissemination of seeds to the island. Nevertheless Mr. Praeger is equally positive that overland migration is accountable for the introduction of the bulk of the flora. This conviction is strengthened by the fact that the island flora is actually richer in species than that of most, if not all, equal areas of the adjoining mainland.

Among the zoological reports the work of Mr. Southern bulks largest. This indefatigable naturalist undertook the investigation of the whole of the worms and their allies, as well as a general essay on marine ecology. His contributions to the Survey publications amount to over 400 pages of print, accompanied by 31 plates. Mr. Southern's labours have resulted in a surprising advance in our knowledge of these groups, notably of the Polychaets and Nemathelmia. Taking the Polychaets as an example, we find recorded a total of 249 species—a larger number than has been found in any other single area which has been investigated, even after many years of work; and of these no less than 16 are new to science, 52 new to the British Isles, and 129 new to Ireland. Among the Nemathelmia no fewer than 27 species new to science were discovered, necessitating the creation of eight new genera for their reception. It is impossible to mention even the more important memoirs in detail, and I must content myself with pointing out the special value of Mr. Wailes' work on the Rhizopods, and that of Messrs. Heron-Allen and Earland on the Foraminifera. Both of these reports are of the most far-reaching character, clearing up many difficult and doubtful points, revising old genera and species and creating new ones, and very largely advancing our knowledge concerning these organisms in our own seas.

The chief object of the Clare Island Survey was the study of the problems of dispersal and distribution of the fauna and flora. Some of the naturalists connected with the Survey paid special attention to these problems in their own branch of investigation. Unfortunately most of them

were unable to do so. Taking the whole body of evidence there is a practical unanimity of opinion among the observers, resting on varied evidence derived from many different groups of animals, that the narrow strait of sea which separates Clare Island from the mainland represents a very serious barrier to migration. The existing fauna as a whole of Clare Island could not have crossed this barrier.

The Survey has thus led to a definite advance in our knowledge of the conditions of dispersal of animals and plants. We can now affirm, as the result of these investigations, that the biological evidence points to the existence of a former bridge of land between Clare Island and the mainland. We need not imagine this bridge of land to have looked like a bridge such as we construct nowadays. The term "land-bridge" has been used biologically in the sense of a former continuous land-surface connecting two areas now separated by the sea. The study of animals and plants does not reveal to us whether this land connection was narrow or broad or whether the whole coast-line formerly lay far westward of its present site. In the latter case Clare Island would have formed part of the mainland, being surrounded on all sides by land. In any case we may assume that after these events had taken place the land either subsided or the sea rose so as to produce the geographical features of the present time.

Now it seems as if we had not devoted sufficient attention to the importance of the absentees in our fauna. Especially is this the case among the aquatic species. It is a striking fact, for example, that the Frog is absent from Clare Island, whereas it occurs abundantly on the mainland as well as on Achill Island. Less than half the fresh-water mollusks of Ireland are recorded from Clare Island by Mr. Stelfox, although this does not appear to be altogether due to the absence of suitable habitats. Mr. Balfour Browne dwells on the poverty of the aquatic beetle fauna of Clare Island; but he believes that the lack of variety of habitat is accountable for it. As regards fresh-water entomostraca, the island fauna is mainly noticeable for negative rather than positive characters according to Mr. Scourfield. Of the five

freshwater sponges found by Miss Stephens in the area investigated only one occurred on Clare Island.

There is thus a general concurrence of opinion among the investigators that the fresh-water fauna of the island is decidedly poor as compared with that of the mainland. The lack of suitable habitats may partly account for this poverty, but not altogether. If we assume that the bulk of the Clare Island fauna and flora reached its destination by means of a land connection, the facilities for dispersal of the aquatic forms may have been deficient at that time. Or the poverty of the freshwater fauna may be due to quite another cause. It may have been partially destroyed on the island itself. No biological features are apparent which would lead us to suspect such a destruction. Yet if we suppose, for example, that the sea-level had stood higher than it does now at any time after the arrival of the fauna, many fresh-water species would have been killed as the result of the serious diminution of the fresh-water area on the island. Is the poverty in the fresh-water fauna due to this cause? The geological evidence may possibly elucidate the problem.

According to Mr. Hallissy, and most geologists agree with him, arctic conditions set in not very long ago over the whole of Northern Europe, with the result that ice-sheets developed, burying the whole of Britain as far south as the valley of the Thames. During the period of maximum ice-development, says Mr. Hallissy, Clare Island and the Clew Bay area were overwhelmed by the Central Irish glacier, which invaded the district in a direction a little south of west. The belief in an Ice Age, such as it is described, is principally founded locally on the presence of grooves and striations which have been noticed on the rocks of Clare Island, together with the occurrence of boulders of mainland origin and of scratched stones in the Boulder-clay. Formerly these phenomena were held to be due to floating icebergs during a partial submergence of the Irish area.

Mr. Hallissy does not express any opinion as to whether any of the existing elements in the fauna and flora could have survived these glacial conditions on Clare Island, but

it is fairly evident that few, if any, animals and plants would have had any chance of persisting through such unfavourable conditions. He contends, however, that in all probability a land connection existed between Clare Island and the mainland which facilitated the passage of the fauna and flora. This would make the age of the animals and plants on the island post-Glacial, that is to say, they could only have migrated to the island after the Ice Age had completely passed away from Ireland.

The theory of the former existence in Ireland of an arctic climate, accompanied by widespread icefields, has been adopted, as already stated, by almost all geologists, and so far it has withstood the criticisms that have been advanced against it. Nevertheless we must not forget that it is only a theory, and that we should lose no opportunity to test the soundness of the evidence on which it rests. Polished and striated stones found in Boulder-clay are generally believed to have been produced naturally by glacial action. But Professor Meunier, of Paris,¹ has carried on experiments for the past twenty years as to the manner in which similar results can be produced artificially. By subjecting a mass of moist clay containing stones and placed on a slope to great pressure, he found that a gradual re-arrangement of the contents took place. He noticed also that the stones became scratched in a manner similar to that observed in Boulder-clay. As the result of these and other experiments, he came to the conclusion that most of the polished and striated stones found in Boulder-clay are not produced by glacial action, but in consequence of what he calls "subterranean denudation." Prof. Meunier returns, moreover, to the older view that the Boulder-clay itself is largely the product of marine action aided by icebergs. Unfortunately Prof. Meunier's researches have as yet scarcely passed beyond a small circle of French geologists, and it is only quite recently that he has been prevailed

¹ Meunier, Stanislaus: Observations sur la théorie générale des phénomènes glaciaires et sur les galets striés. *Proc. Acad. Nat. Sc. Philadelphia*, vol. lxviii., 1915.

upon to publish some results of his work at the request of the Academy of Natural Sciences in Philadelphia. Whether his views will eventually be accepted by geologists remains to be seen. In any case, however, the facts so laboriously collected during the Survey of Clare Island will always be available to investigators and will be of invaluable benefit in future researches.

IRISH SOCIETIES.

BELFAST NATURALISTS' FIELD CLUB.

AUG. 27.—EXCURSION TO GLASLOUGH.—Twenty-seven members and friends entrained at Belfast and travelled by the 9.30 a.m. train to Glaslough. Here they were met by Mr. W. F. de V. Kane, D.L., M.R.I.A., who conducted the party to the demesne of Colonel Leslie, D.L., who had kindly granted permission to the Club for the exploration of his place. Passing from the entrance gates towards the house the many species of exotic conifers and other trees and shrubs absorbed the attention of the members, and on reaching the terrace on which the house stands all paused to admire the view embracing Glaslough Lake, backed by woods just beginning to assume the mellow tints of autumn.

After examination of the art treasures of the house, Mr. Kane then led the party to the lake side, where lunch was partaken of, and afterwards all scattered to follow their particular bents. The earlier portion of the afternoon was mainly spent in the woods bordering Glaslough Lake, and some of the more energetic members paid a visit to Kivey Lake. By four o'clock almost all had reassembled in the gardens, through which they were conducted by Mr. Bryce, though it proved somewhat of a disappointment to some of the members that so tidy and clean was the place that lurking places for "vermin" were conspicuous by their absence. Shortly after half-past four the conductor's whistle summoned the party, and all proceeded to the railway station, where they found tea awaiting them. After tea a short business meeting was held, N. H. Foster, F.L.S., M.R.I.A., presiding. On the motion of J. R. Macoun, seconded by Mr. F. A. Heron, hearty votes of thanks were passed to Colonel and Mrs. Leslie for their kindness and courtesy in admitting the party to their beautiful house and demesne, and to Mr. Kane, who attended to direct their steps. Mrs. Aird, Mrs. McCarthy, Miss Young, and Hugh Aird were elected members; the proceedings terminated. About an hour was now at the disposal of the members, which was devoted to collecting in the neighbourhood of the station, etc.; and at 6.30 the reserved carriages were re-entered, and Belfast safely reached at 8.15, thus bringing to a successful termination the summer session of the club's fifty-third year.

NOTES.

BOTANY.

Nasturtium sylvestre in Co. Down.

The Narrow-podded Marsh Cress has not been found hitherto in Ireland further north-east than Belleisle, Co. Fermanagh. Mr. S. A. Bennett recognised it this year growing by the gravelly shore and on walls by the River Quoile, near Downpatrick, between the town and the bridge. I have specimens in my herbarium gathered at Hollymount in September, 1898, during an excursion of the Field Club, which I named *sylvestre*, but Mr. S. A. Stewart, who was one of the party, thought it was only a form of *palustre*. I have similar plants gathered near Inch Abbey in 1905, by Rev. C. K. Pooler and myself, and there is no doubt of its being *sylvestre*, as it corresponds exactly with English specimens in my collection. It is abundant all along the river Quoile in the Downpatrick neighbourhood, where *N. palustre* also grows, but was not so abundant this season as the rarer species.

C. H. WADDELL.

Greyabbey.

ZOOLOGY.

Selective Instinct of Bees.

I am glad to have Mr. Moffat as a co-worker in those very interesting observations we have been making on this subject, and if his conclusions and mine are rather divergent, at this stage, this seems due to insufficient observation data more than anything else. It is true, as Mr. Moffat states, there are differences, well-marked to a botanist's eye, between *Oxalis floribunda* and *O. valdiviana*; but on the points that would apparently most affect the bee, size of flower, depth of nectary, or supply of nectar and pollen, there is really no difference.

In North Wexford, about the middle of last August, I had under observation a large roadside clump of Blue Scabious (*S. succisa*), about a hundred plants or so, at one end of which was a small patch, eight or ten plants, of the white variety of this scabious. There were also a few white flowers scattered throughout the masses of blue; but I confined my attention to the spot where these white flowers were most thickly massed. The bees at work consisted of the Hive-bee, the humble-bees *Bombus terrestris*, *agrorum*, *hortorum*, and *sylvarum* (or *derhamellus*), and a few others of no importance in this matter (*Halictus*, *Colletes*, etc.).

Apis throughout confined its attention to the blue flowers only, an individual occasionally touching for a moment at a white flower, but never collecting from it. During more than an hour I was unable to detect a single Hive-bee working at a white scabious, though many must have made the double flight, to the hive and back, in the interval. The nearest hives of which I had any knowledge were about a mile distant. *Bombus* was more promiscuous in its favours. I captured a large queen of *B.*

terrestris, and having no other means of marking, removed the scape of her left antenna. Ten minutes afterwards she was back again upon one of the white flowers (she had been taken on a blue flower) and for eight or nine minutes she kept passing from one white flower to another, resting now and again on a blue blossom, but not taking honey from it. Worker bees of *B. agrorum* and *terrestris* occasionally passed from blue to white, or white to blue, but hardly ever collected from the flowers to which they changed. In two cases, however, where I watched them closely, I found workers of *terrestris* collecting from blue and white indiscriminately, or rather gathering generally from one colour and occasionally from the other.

I am not in a position to theorise as to what bearing these selective preferences may have upon the question of cross-pollination. Fertile seed-bearing, as we know, is impossible, or nearly so, for many plants, without the intervention of bees, or other pollen-transferring insects; but exactly how far insect preferences, granting they are well-established, may be held to limit cross-fertilization is quite doubtful. I have grown beds of red and yellow Wallflowers, from seed, each bed being self-coloured and remote from the different colour; but from seed saved from each flower-bed I have had plants with striped flowers, red and yellow. I cannot prove that the bees were responsible for this, or that it would not have occurred if the plants had been grown under glass, out of the reach of bees. The white form of *Scabiosa succisa* is a sport, for the most part a local sport, the type colour of the plant being purple-blue. No interchange of preferences by bees would be likely to affect it by cross-pollination, though it may be argued that these instincts would affect that purpose in the case of other flowers. My conclusion, however, is that we have yet to be sure of the bearing of the natural law in this, if there be such a law, and how it is modified by circumstances.

H. G. CUTHBERT.

Dublin.

Floating Barnacles on the Coast of Antrim.

While walking on the sandy shore near Portrush on the afternoon of August 29th last, my attention was drawn to numerous whitish, globular, spongy masses, varying in size from a marble to a tennis ball that had been left on the shore by the receding tide. An examination of these masses showed that imbedded in them were the ends of peduncles of the barnacle *Lepas fascicularis*; the larger masses having about a dozen barnacles attached to them. These spongy ball-shaped masses, although they had much the appearance of Algae or other foreign organisms to which the barnacles had attached themselves, are formed by the barnacles, and consist of a vesicular mass of secretion produced by certain glands (cement-glands) situated in the peduncle of the barnacle. They had generally grown round a piece of seaweed (*Fucus vesiculosus* chiefly) and serve to give additional buoyancy to this species of barnacle, that is usually found floating near the surface of the sea.

Darwin (*Monograph of the Cirripedia*, Ray Society, 1851) gives a detailed description of their structure, and mentions a curious account by

Dr. Coates of an infinite number of these specimens through which he sailed during several days in the southern Atlantic Ocean, and which appeared like birds' eggs and were mistaken for some *Fucus*. Thousands of these objects were lying on the strand between Portrush and the White Rocks, a distance of about two miles, on August 29th, more were left by the tides on the three following days, also on the strand towards Portstewart, and Miss J. Stephens tells me that she observed many at Ballycastle on August 30th. A strong northerly wind had been blowing for some days and had apparently brought them in from the ocean. The barnacles were alive and mostly of large size, the capitulum of many of the specimens having a length of 40 mm. and a breadth of nearly 35 mm. *L. fascicularis* has a very wide distribution, having been recorded from the N. and S. Atlantic, N. and S. Pacific, and the Indian Ocean.

Thompson ("Natural History of Ireland," vol. iv., London, 1856) gives a few Irish localities for this species, and states that Mr. Hyndham in 1831 found it attached to *Fucus vesiculosus* and *F. nodosus* thrown ashore (and quite fresh) at Magilligan and Portstewart, and subsequently at the Giant's Causeway on both species of *Fucus*, as well as on the feathers of sea-fowl.

Farran ("Occurrence of the Floating Barnacle, *Lepas fascicularis*," *Ann. Rep. Fish., Ireland*, 1902-03, Pt. ii., App. vii., 1905) refers to the most exceptional occurrence of this barnacle in immense numbers off the West Coast of Ireland during the quarterly cruise of the "Helga" in August, 1903. It would seem to be thrown ashore occasionally on the Atlantic coasts of Ireland, though seldom in such numbers and of as large size as during the last three days of August, 1915.

A. R. NICHOLS.

National Museum, Dublin.

Oblong Sunfish off Co. Cork.

It may be of interest to record that a specimen of the Oblong Sunfish (*Orthogoriscus truncatus*) was captured near Baltimore at the end of May last. The fish was found on a beach at the Calves Islands and was brought to Baltimore, whence it was sent by Mr. Hanlan, Customs officer, to the British Museum, where it was identified. I did not see the fish myself, so am only able to give the approximate length—2ft. 6 ins. I am indebted to Dr. Scharff for kindly advising me to publish this record.

F. W. L. KEANE.

Baltimore, Co. Cork.

Redshanks on Migration at Maidens Lighthouse.

On Sunday night, August 15th, large numbers of Redshanks appeared round the lantern of the Maidens Lighthouse. They frequently crossed and recrossed the paths of the luminous beams with great velocity of flight. Several struck the glass and then fluttered obliquely down to the

sea. Three killed outright were picked up; of these, two found on the balcony were males, and one found on the rock at the foot of the tower was a female. I am much indebted to Mr. McCann for handing me over these specimens which he collected. I have already noticed Redshanks on migration from this light-station in *Spring*; and from what I can gather from the keepers, it would seem that Redshank fatalities at Maidens lantern are not by any means infrequent.

C. J. PATTEN.

The University, Sheffield.

Rock-Pipit on Migration at Maidens Lighthouse.

At 11.15 p.m. on September 12th a Rock-Pipit struck the lantern of the Maidens Lighthouse. I am indebted to Mr. Barlow, who handed me over the specimens, which I saw him collect as I stood vigilating on the balcony. The record is very interesting, because it is a clear instance of a Rock-Pipit being taken striking at night the lantern of a rock-station lighthouse, where the bird does not breed nor even frequent.

C. J. PATTEN.

The University, Sheffield.

Greenland Wheatears on Migration at Maidens Lighthouse.

On September 5th, between 11 p.m. and 2 a.m., Greenland Wheatears appeared in small numbers round the lantern of the Maidens Lighthouse. Very few, however, made contact with the glass, though several came in close enough for one to discern that they were of the large race. I measured the wings of one which struck at 11.30 p.m. They were 10.3 cm. The next night this bird appeared in somewhat larger numbers, but not numerously. I measured the wings of two birds which struck the lantern at 1.30 a.m. and 1.38 a.m. respectively. The measurements were 10.4 cm.

C. J. PATTEN.

The University, Sheffield.

Tree-Sparrow nesting in Co. Antrim.

When with the Belfast Naturalists' Field Club on their long excursion in July last I noted a colony of Tree-Sparrows, *Passer montanus*, nesting in holes in one of the cliffs on the North Antrim coast. Mr. Fergus M. Greeves and I watched the birds through our binoculars for some time, and saw them bring food to and in other ways attend to the wants of their young. With them were a few House-Sparrows, but the colony appeared to consist mainly of Tree-Sparrows. On visiting the place again in mid-August I saw a Tree-Sparrow visit a hole in the cliff twice during my stay, but failed to see any other Sparrows in the vicinity. Later in July Mr. Greeves spent a couple of days on Rathlin Island, and while there saw a Sparrow, which he believes was *P. montanus*, but his opportunity for accurate identification was marred. Mr. R. M. Barrington thinks this bird should be found on

that island, and, as has been more than once surmised, it is extremely probable that the Tree-Sparrow exists in many localities on our coasts, but its presence has not been detected owing to its close resemblance to the House-Sparrow.

NEVIN H. FOSTER.

Hillsborough, Co. Down.

REVIEW.

GEOLOGY OF CENTRAL ULSTER.

Explanatory Memoir to Sheet 58, illustrating parts of the Counties of Armagh, Fermanagh and Monaghan (Second edition). By T. HALLISSY, B.A. With Petrographic Notes by G. A. J. COLE, F.G.S. (Memoirs of the Geological Survey of Ireland). Pp. iv. + 26. Map, 1 plate, and 2 text figures. Dublin: H.M.S.O., 1914. Price 3½d.

The first edition of the Survey Memoir of the Monaghan area was published in 1885, and since then so much new information has been collected in the district by the Survey that this second edition has become very desirable. As regards the solid geology, the widely spread grits, slates, and flags which were formerly vaguely classed as belonging to the Lower Silurian of Wales have been re-examined and are now referred to the Ordovician and Gothlandian, and correlated with the great series of rocks of a similar type which stretch from Lough Gowna through Cavan and Down to the Southern Uplands of Scotland. A considerable mass of gabbro, discovered by Mr. R. Clark at Tanderageebrack, to the southward of Monaghan town, has been mapped, and a petrological description of this interesting intrusion and of the other igneous rocks of the neighbourhood is contributed by the Director of the Survey, Prof. G. A. J. Cole.

The Boulder-clay of the district is of local origin, and as regards its composition and erratics presents no features of special interest. The great development of drumlins between Monaghan and Clones raised the question of the origin of these long, low, smooth-backed ridges of Boulder-clay, and Mr. Hallissy, the editor of this edition, gives a general account of the theories advanced to explain their formation. That they are accumulations of ground moraine may be assumed, but whether they are the product of the advance of a single ice-sheet or are produced by the erosion of earlier accumulations of the drift by the advance of a second ice-sheet is still uncertain, and the examination of the Monaghan area gives no fresh information on the question. A chapter is devoted to the minerals of the locality, the Calliagh shales yielding iron and manganese, while lodes of galena have been worked for lead in many places. The memoir is illustrated by an excellent map in colours showing the new divisions into Ordovician and Gothlandian; it is a great pity, however, that the photograph illustrating drumlins scenery should have been so badly reproduced.

J. DE W. H.

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THE SCOTTISH NATURALIST,

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EDITED BY

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RICHARD M. BARRINGTON.

RICHARD MANLIFFE BARRINGTON,

M.A., LL.B., F.L.S., M.R.I.A.

THE shock caused throughout the whole circle of Irish naturalists by the news of the sudden removal from amongst us of a man so universally beloved as Richard M. Barrington is beyond the power of words to convey. He was the central figure among the enthusiasts for natural science who survived More, and while there was scarcely a leading man among the zoologists and botanists of the United Kingdom whose friendship he did not possess, he had in a no less remarkable degree the confidence of the large circle of lesser naturalists and mere beginners, to whom his magnetic zeal proved a stimulus that there was no resisting.

Of an old family that had settled in Queen's County about 1564, Richard Manliffe Barrington (born at Fassaroe, on the 22nd of May, 1849) was the eighth and youngest son of Edward Barrington, J.P., of Fassaroe, co. Wicklow, and only son and eldest child of his second wife, Huldah Barrington (née Strangman). Edward Barrington was the eldest son of John Barrington, of Glendruid, co. Dublin, in whose family strong scientific learnings clearly existed. Of John Barrington's sons, the first (Edward) showed this family feature by the care he bestowed on the meteorological record that he started at Fassaroe, where he also instituted a system of farm accounts that may still be described as a model for all farmers; Richard, the second, was a good botanist, and the third son, John, is honourably remembered as the founder of the Barrington Lecture Trust. Young R. M. Barrington was a delicate-looking, white-faced boy, but with much open-air life and exercise he grew up a remarkably vigorous and energetic man.

The love for nature, and particularly for wild plants, grew up with him like an instinct. The beautiful surroundings amid which his childhood was spent had doubtless a strong influence on him in this direction, and he was fortunate also in having among his elder relatives several who encouraged his tastes, and helped him in different ways. He used afterwards to speak with special gratitude of the

debt he owed to his eldest half-brother, Edward, who not only gave him books on natural history, but also made a point of reading them himself, to become a more intelligent helper. From a journal he began to keep at thirteen, and in which notes of natural history observations are frequent, it is plain that plants were his "first love," but birds quickly gained a high second place in his affections. His first note to the *Zoologist*, in 1866, is a well-informed one on the food of the Woodpigeon. It contains the characteristic statement that a Woodpigeon shot by him in the previous winter (*i.e.*, when he was sixteen) "had 98 beech-nuts in its crop." In a farm so well kept as that of Fassaroe it is not wonderful that his zoological talents were early turned to good account. "When a boy," he records in a later note, "nearly all my pocket-money was earned by rat-catching, my father allowing me one penny per head, so I soon became expert at the trade, and well acquainted with the habits of the rats." A good deal of miscellaneous information not suggested by the headlines found its way into his early short notes. For instance, the fact that Squirrels were already numerous at Fassaroe in 1867 is incidentally mentioned in a note on "rats eating grapes."

Prior to entering Trinity College he was taught chiefly by tutors at home, though for about a year he attended a day school at Bray. In 1866 he entered Trinity College, Dublin, where he graduated with honours in 1870 as a Moderator in Experimental and Natural Science. These two subjects were in the following year formed into separate Moderatorship courses, and Barrington was unlucky in taking his degree in the last year in which his favourite study held only a subordinate place.

In 1875 he was called to the Bar, and went the Leinster Circuit. But he soon found the work of a land valuer far more to his taste than attendance at the Four Courts, and amongst its other advantages it kept him, even in the midst of his professional duties, largely in the open air.

It was during his undergraduate years that, during some of his visits to the Royal Dublin Society's Museum, he "discovered"—as he afterwards expressed it—"that there was somebody there who took so great an interest in

all my inquiries that I thought him quite the most delightful person I had ever met." This was, of course, A. G. More, and it is unnecessary to say how close was the attachment ever afterwards maintained between the two. Through More it was that nearly all Barrington's early friendships with other British and Irish naturalists were formed. Perhaps the earliest of these was with Robert Warren, who in 1874, during the meeting of the British Association at Belfast, called at More's request on the Barringtons, father and son, and thus started a friendship that only increased in cordiality as years went by. No words could describe what his friendships meant with Barrington, and an enumeration of them here would be impossible. Among the closest formed with the naturalists whose names are specially associated with scientific or exploring work in Ireland must be mentioned those with R. P. Vowell, R. J. Ussher, and the brothers Edward and William Williams. Outside this island perhaps, the strongest, and those most, frequently and enthusiastically recalled in his conversation were with the late Howard Saunders, Colonel Feilden, and Mr. J. A. Harvie-Brown. More, however, continued throughout his life Barrington's chief counsellor and prompter in all matters relating to natural history exploration in Ireland, and it would be difficult to form an estimate of how much each of them owed to the other.

What seems to have interested More most among the fruits of Barrington's early researches was his finding on a little hedgebank at Fassaroe on the Dodder (*Cuscuta Trifolii*), growing in this locality as a thoroughly established plant, though needing, in most seasons, a sharp eye to detect its presence. In the supplement to the *Cybele Hibernica* ("Recent Additions") published in 1872, Barrington is quoted as an authority for new localities of plants in as many as six counties—Dublin, Wicklow, Wexford, Waterford, Galway, and Armagh—no inconsiderable proof of his early proficiency.

Losing his father in 1877, Barrington became more closely concerned than before with the management of the extensive farm at Fassaroe, into which he entered with a thoroughness that would even in the absence of other

calls on his time have made him a busy man. The vigour with which he addressed himself to an immense variety of pursuits, along with the proficiency which he seemed to attain in all alike, was amazing. Looking back on one aspect of the life of those years, he was able to say in 1888 (*Zool.*, xii., 367) "For nearly twenty years I have been visiting out-of-the-way islands on our western and southern coast, from North Rona to St. Kilda, and then southward to the Skelligs and Blaskets, not merely flying visits, but living on them for days and weeks at a time in the height of the breeding season. I have scarcely missed a year."

It was during these years that he carried out (always in company with some brother botanist) the explorations on Irish islands, lake-shores, and mountains the results of which appear in his papers on the plants of Tory Island (1879), the Blaskets (1881), shores of Lough Erne (1884), Ben Bulbin range (1885), and shores of Lough Ree (1888), while ornithological notes were gathered with equal zeal on innumerable islands; the breeding haunts of the Gannet, in particular, being to him always of special interest. Time had been found within the same period for visits to Iceland (1881), St. Kilda (1883), the Rocky Mountains (1884), and North Rona (1886)—the expedition to Shetland was made later, in 1890—and two visits to Switzerland (1876 and 1882) had given him a reputation among Alpine climbers that is probably in some respects still unsurpassed. Following the footsteps of his brother, Charles, who had been the first to ascend that mountain, he successfully climbed the Eiger in 1876, and in the stormy and unpropitious summer of 1882 he achieved the feat of ascending within eleven days (July 26 to August 5) the Schreckhorn, Finsteraarhorn, Jungfrau, and Matterhorn, with an equal number of high passes, making in all a record of 84,500 feet within that brief period. Scarcely less remarkable was his walk across the Rocky Mountains two years later with the Rev. H. Swanzy. In his visit to St. Kilda he was unlucky in not obtaining—despite continuous efforts—a specimen of the Wren of that island, described as a new species a year afterwards by Dixon and Seebohm; but it seems, nevertheless, to have

been one of the most thoroughly-enjoyed of all his expeditions. His geniality and love of humour made it a peculiar delight to travel with him, though this sometimes (as in North Rona) involved sleeping for a series of nights on the ground, or at other times (as in the Rocky Mountains) adventures more suited to the pages of romance than of science.

In 1882 began his regular correspondence with the lightkeepers on the migration of birds. It was the turning point of his scientific life, for the work proved an infinitely greater tax on him than could ever have been foreseen when, conjointly with More, he became responsible for the Irish section of the work of the British Association's Migration Committee.

The Irish lightkeepers entered heartily into the scheme, and filled up the schedules sent to them with, in many cases, surprising regularity, fulness of detail, and—as far as their knowledge went—accuracy. But it soon became evident that the value to be placed on these observations would be very limited, unless specimens were constantly forwarded to ensure correct identification of the various birds referred to. For instance, the earliest "Reports" bristled with notes of the passing or striking of large numbers of "Wrens," "Tits," "Flycatchers," and "Linnets"; while it was clear that only in a very small minority of the cases could the birds referred to under any of these names have been correctly described. When in 1886, at More's suggestion, the lightkeepers were asked to corroborate their observations by the frequent sending of the legs and wings of the birds found killed, the value of the results of the inquiry became immeasurably greater; but by the end of 1887 the British Association considered that enough expense had been incurred in the printing of the lightkeepers' voluminous reports, and so brought the series to a close just as its results had begun to look most promising. It was a great disappointment to many ornithologists, and Barrington quickly resolved that, so far as Ireland was concerned, the inquiry, and the publication of results, should go on. From 1888 onwards the whole expense of the Irish Migration Reports was therefore borne by him alone.

This so absorbed him that though, in 1890, he was associated with A. G. More, R. J. Ussher, and Robert Warren as the proposed joint authors of a new work on the "Birds of Ireland," he soon found it advisable to withdraw his name from that undertaking, and concentrate his ornithological attention on the migration schedules and specimens.

His large book on the Migration of Birds as observed at Irish light stations embodies the result—at least up to 1898, for the accumulation of facts and specimens went on after the publication of the book as unceasingly as before. Perhaps the chief feature of the book—as compared with other works on the same subject—is that by printing the lightkeepers' reports in full Barrington publishes all his data, so that no risk is incurred of any over-confident statement of conclusions founded on those data carrying more weight than an examination of the data warrants. As the evidence is so largely cumulative, this is an important merit.

One important product of the Migration inquiry was the wonderful Fassaroe Museum, in which the rare birds received from lighthouses, and the legs and wings of the commoner species, were arranged and preserved. As many as sixteen of the species represented in this collection (or eighteen if we include two that are suspected of having received partly "assisted" passages) are birds that had not been proved to visit Ireland at all until the first specimens were sent by the lightkeepers to Fassaroe. The eighteen birds (bracketing the doubtful ones) obtained for the first time in Ireland through Barrington's lighthouse correspondents, are the following :—

Greenland Wheatear.	Reed Warbler.
Lesser Whitethroat.	Aquatic Warbler.
Yellow-browed Warbler.	Pallas's Grasshopper Warbler.
Melodious Warbler.	Dartford Warbler.
Lapland Bunting.	Redbreasted Flycatcher.
Eastern Sky-lark.	[Black Snowbird].
Short-toed Lark.	Greenland Redpoll.
Shore-Lark.	Little Bunting.
[Yellow-billed Sheathbill].	Woodchat Shrike.

Though a few of these—such as the Woodchat—are represented in the collection by legs and wings, nearly all were sent entire, the lightkeepers having recognised them as probably rare enough to be worth preserving ; and this in itself is no small tribute to the acumen developed in so many of the men by Barrington's encouraging influence.

With all his absorption in migration work there was, however, no falling off in interest in other branches of nature study. Indeed, he would sometimes say in a quiet talk that plants *always* exercised over him a fascination even greater than that possessed by birds. The charming grounds of Fassaroe are the chosen breeding haunts of two such particularly interesting birds as the Blackcap and the Cross-bill, and it undoubtedly afforded him a rare satisfaction during the present year to watch some Crossbills at their nesting operations near his house, while some observations well worthy of record on the nest material used by the Blackcap furnished matter for his last communication to *British Birds*, only a few weeks before his death. Yet what thrilled him with most pleasure during his walks about those grounds was the sight of some of his favourite and long-studied plants—the self-sown seedlings of the Arbutus that flourished as in a native home, the little Dodder plant that had so long held its own in a spot where its presence completely belied its general reputation, the Mimulus that imparted most extraordinary beauty to the stony bed of the Enniskerry stream, and the Soapwort that flourished in masses on the adjoining bank. Nothing else in natural history, he once told a member of his family, gave him such intense pleasure as the finding of a new plant.

The re-discovery by himself and H. C. Hart in 1892 of the long-lost *Rubus Chamaemorus*, in an expedition specially undertaken for that purpose to the Sperrin Mountains, was quite a sensational episode in Irish botanical history ; and it was all the more gratifying to Barrington's warm heart as yielding a triumphant proof of the accuracy of A. G. More's judgment in holding, against a host of disbelievers, that the original record of the plant's existence on those mountains must be correct. The finders having agreed that the secret of the exact locality should be pre-

served, the only other botanist to whom it was subsequently imparted was Barrington's life-long friend, R. P. Vowell. There is, therefore, no one now living who knows the exact spot. This, however, is certainly not Barrington's fault, for so lately as in the closing days of last July he tried to persuade another naturalist to go with him to Tyrone to be shown the plant *in situ*. In any case, it is believed that means have been taken to render re-discovery a comparatively light task.

The expedition to distant Rockall in 1896, originally planned by Mr. Harvie-Brown and himself, and in great measure financed by them, is still a fresh memory to most of those who took part in it. In the following year occurred an event of great importance in Barrington's life—his most happy marriage with Lena Gyles, daughter of Capt. G. Gyles, of Kilmurphy, co. Waterford. As a small mark of Mrs. Barrington's helpfulness to her husband, it may be said that the formation of the Fassaroe Museum was her suggestion. The bringing out of the book on the "Migration of Birds" was also largely accelerated by her aid.

In the year following the publication of his book his time was even less at his own disposal than it had been before, as an important official appointment in the Land Commission made heavy demands on it; but his ready aid could still always be relied on in movements for the spread of nature knowledge—as may be seen from the active part he took in responding to the calls of various scientific and other educational societies, including the Royal Dublin Society, the Royal Irish Academy, the Royal Zoological Society of Ireland, the Statistical and Social Inquiry Society, the Dublin Friends' Institute—frequently addressed by him on zoological topics—The Dublin Naturalists' Field Club, and the Irish Society for the Protection of Birds. His helpfulness behind the scenes was as important as the happy address that made him a universal favourite on the platform. To the Field Club he was ever a most generous and ready friend, often coming to Dublin to attend its evening meetings, and personally conducting its summer excursions to places like Lough Bray and Glencullen—excursions that were invariably arranged by him to wind up

with a delightful visit to the hospitable house at Fassaroe. To the *Irish Naturalist* his help and friendship were invaluable. Of his constant support to this journal—as a guarantor, a frequent contributor, and a generous friend in other ways, as in the special celebration of its “coming of age” in which he was the moving spirit in April, 1913—it would be difficult indeed to say too much. The Irish Society for the Protection of Birds also owes more than can well be expressed to the interest he always showed in its work. And at home, in the midst of his little family, he seized every opportunity, whether indoors or in the fields, to pour out instruction on some branch of his favourite study, having no firmer faith in his mind than that such knowledge is a lasting joy to all who possess it.

His writings during those years generally took the form of short notes recording occurrences of lighthouse birds, and it is probable that he will be better remembered through some earlier ones, like the admirable essay on the Introduction of the Squirrel into Ireland, and his remarkable chronicle of the breeding habits of Field Mice in captivity, as well as the story of the finding for the first time in Ireland—or, for that matter, in the British Islands—of a large colony of Hairy-armed Bats. He also contributed a highly interesting list of the birds of Dublin and Wicklow to the British Association Handbook in 1908; nor should mention be omitted of his illuminating account in the *Irish Naturalist* of the astonishing inland bird-rush of the night of March 29–30, 1912. Four obituary articles written for this journal on his friends More, Edward Williams, Hart, and Ussher yield striking evidence of how strongly Barrington possessed the “genius for friendship.” In some (not strictly biological) papers read to the Statistical Society, such as the “Drought of 1887” and the better-known one on the prices of Irish agricultural produce, his interest in meteorological statistics, and his profound knowledge of practical agriculture must impress all who open them; and his account of the ascent of Stack-na-Biorrach, St. Kilda, contributed to the *Alpine Journal* in 1913, is well described by one of his most attached friends,

Colonel Feilden (in a letter to Mrs. Barrington), as “an epitome of the man’s character.”

It is pleasing to reflect that the last summer of his life must have been one of the happiest he had spent for many years, for on his release from the responsibilities of his Land Commission work he was able to throw himself with greater freedom into all his old studies, and in the course of one nesting season successfully looked up at their homes all the rarest Irish breeding birds—the Red-throated Diver, Red-necked Phalarope, Roseate Tern, and Common Scoter—besides finding a new colony of the Sandwich Tern, and being shown what looked like strong evidence of the nesting of the Black-necked Grebe in Ireland. He might well call this a “record” circuit.

His end was touchingly consistent with his whole career. Arrested suddenly by the hand of death when driving his motor car home from Dublin on the 15th of September, with no other companion but his little son, he had the presence of mind and strength of will to draw up and completely stop the car almost immediately before expiring without having uttered a word, or shown a sign of suffering. He had discharged his duty to the last with the quiet thoroughness that marked his entire life.

C. B. MOFFAT.

LIST OF THE SCIENTIFIC WRITINGS OF R. M. BARRINGTON.

Note.—In many instances titles have been abbreviated. Also, since year of publication is given in the margin, it has not been thought necessary to quote the volume number of periodicals, save in the case of *British Birds*, where each volume includes portion of two years.

BOTANY.

1872. Plants recorded from Ireland. *J. of Bot.*, 1089.
 1877. Irish Plants collected by J. Reilly. *J. of Bot.*, 178.
 1879. Plants of Tory Island. *J. of Bot.*, 263.
 1881. Flora of the Blaskets. *Proc. R.I.A.* (2), iii., 368.
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 1885. Flora of Ben Bulbin range. *Proc. R.I.A.* (2), iv., 493.
 1886. Flora of St. Kilda. *J. of Bot.*, 213.
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 1890. *Trientalis europaea* in Foula. *J. of Bot.*, 315.
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 1899. Records of Connemara Ferns. *Ir. Nat.*, 142.
 1903. *Ranunculus Auricomus* [var.]. *Ir. Nat.*, 197.
 [with R. P. Vowell] *Rubus Chamaemorus* again observed. *t.c.*, 317.
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 1905. Vitality of Seeds. *Ir. Nat.*, 69.
Epilobium alsinefolium in Leitrim. *t.c.*, 260.
 1906. Names and uses of *Molinia coerulea*. *Ir. Nat.*, 219.
 1915. Plants of Ben Lettery. *Ir. Nat.*, 169.

ZOOLOGY.

1866. Food of the Woodpigeon. *Zool.*, 498.
 1867. Summer Migrants, co. Wicklow. *Zool.*, 754.
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 Rats eating grapes. *t.c.*, 987.
 1869. Abnormal dentition of Rabbit. *Zool.*, 1843.
 Albino Sand-Martin. *t.c.*, 1847.
 1874. Siskins breeding in Ireland. *Zool.*, 3914.
 Golden Eagle at Powerscourt. *t.c.*, 3952.
 Position of feet in Tree-Creeper. *t.c.*, 3998.
 Hairy-armed Bat in Armagh. *t.c.*, 4071.
 Migration of Spring Visitants. *t.c.*, 4100.
 1875. Hairy-armed Bat in Wicklow. *Zool.*, 4532.
 Mouse eating flies. *t.c.*, 4571.
 Rat killing its own species. *t.c.*, 4662.
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1876. Siskins breeding in Wicklow. *Zool.*, 4957.
Eagle trained to hunt wolves, &c. *t.c.*, 5162.
1877. Rooks attacking acorns. *Zool.*, 299.
Natural History of Donegal. *t.c.*, 223.
Blackcap in co. Wicklow. *t.c.*, 299.
1878. How Rabbits and Rats eat turnips. *Zool.*, 178.
1880. Introduction of the Squirrel into Ireland. *Proc. R. Dublin Soc.*, n.s., vol. ii.
1882. Breeding Habits of the Field Mouse. *Zool.*, 121.
- 1882-7. [Conjointly with A. G. More]. Reports on the Migration of Birds.
1883. Note of Manx Shearwater. *Zool.*, 28, 82.
Hairy-armed Bat in Fermanagh. *t.c.*, 116.
Dipper singing during frost. *t.c.*, 179.
1884. Woodpigeon cooing at night. *Zool.*, 231.
The St. Kilda Wren. *t.c.*, 383.
Breeding stations of Gannet. *t.c.*, 473.
1885. Breeding places of Gannet. *Zool.*, 32.
Note on Snow-Bunting. *t.c.*, 190.
Dormice turned loose in Ireland. *t.c.*, 479.
1888. Manx Shearwater on Skomer. *Zool.*, 367.
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IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a female Eland from the Duke of Bedford, a Rabbit from Mr. L. Ward, a Barn Owl from Mr. T. Shiel, Sparrowhawks from Miss Baker and Mr. W. M'Culloch, a Cygnet from Mr. Dease, a Wood Pigeon from Mr. W. W. Despard. The female Eland is a very large and handsome specimen; visitors to the gardens have now the opportunity of seeing both sexes of this largest of the African antelopes.

BELFAST NATURALISTS' FIELD CLUB.

SEPTEMBER 11.—EXCURSION TO ARDTOLE.—About forty members of the Archaeological Section and friends, conducted by R. May, travelled by the 1.56 train to Ardglass to visit the ancient church of St. Nicholas, Ardtole. They were met by F. J. Biggar, M.R.I.A., who described the good work lately carried out by the Board of Works in conserving what remained of this historic church, and subsequently entertained the party to tea at Castle Shane.

NOTES.

ZOOLOGY.

Sirex gigas and other Insects in North Wexford.

On the 20th of last August I spent a few hours on the summit of Tara (or Taragh) Hill, about three miles south-east of Inch, in north county Wexford.

This hill, rough and heather-clad in its upper portion, rises to a height of about 900 feet, and is crowned by a cairn of boulders and stone blocks of varying size, whilst many rocks and large stones lie around, half-buried in dwarf furze.

The day was fine and very warm, and I noticed a great profusion of large insects flying over the cairn and settling on the rocks. At first I took them to be dragon-flies, but they proved to be *Sirex gigas*, and all of the same sex, males without exception. This I thought the more remarkable, as there are no pine-woods near the hill, although there are conifers in abundance in various demesnes not many miles off. Besides this saw-fly other insects which I noticed at the same place on the same occasion included the butterflies *Vanessa atalanta* and *io*, the hawk-moth *Smerinthus ocellatus*, a great gad-fly, probably *Tabanus suecicus*, and queens of the social wasps *Vespa sylvestris* and *rufa* (type form).

Dublin,

H. G. CUTHBERT,

Sunfishes in Lough Foyle.

Seeing a note in the *Irish Naturalist* (*supra*, p. 190) on the occurrence of a Sunfish (*Orthogoriscus truncatus*) near Baltimore, co. Cork. I venture to send the dimensions of a big fish of this genus (I cannot speak as to the species) at present lying here on the shore of Lough Foyle :—

Length from mouth to tail, 6 ft. 4 in.

Depth from base to base of fins, 6 ft.

From tip to tip of fins, 7 ft. 4 in.

These measurements, owing to partial decay, are probably less than when the fish was alive. This is, I believe, the largest example of its kind that I have seen ; but it is not an exceedingly rare thing for them to be cast up along these coasts.

I enclose a copy, kindly made for me by Miss M. Colgan, of the figure of a Sunfish, shown at the top of an early map, entitled " A New Map of the City of Londonderry with its Confines ; As it was besieged (*sic*) by the Irish army in the year 1689. Exactly survey'd by Capt. Francis Neuill." Over it is the superscription :—" This Fish was taken on ye N : W : Side of ye Kay of Derry on ye Lords day while the people were at Church by a Ship boy not long before ye shutting ye Gates ; It was 4 foot long, 2 foot broad, & 5 foot 3 inches from poynt to poynt of the finns ".

A story heard long ago from an old countryman regarding this fish may, perhaps, be worth repeating. After a description, quite unmistakable, of the monster, he went on to relate how the fishermen lifted it upon their oars, and carried it to " The Master." " The Master " told them it was called " Fish, Flesh, and Fowl." And when it was cut up, they found one part flesh, like beef ; another part like fowl, and a third part fish !

Kilderry, Co. Donegal.

W. E. HART.

Tree-Pipit on Migration at the Tuskar Lighthouse.

On the night of September 9th last a Tree-Pipit struck the lantern of the Tuskar lighthouse, Co. Wexford, and was procured by Mr. Glanville, to whom I am greatly obliged for the specimen.

C. J. PATTEN.

The University, Sheffield.

Pied Flycatcher and Lessor Whitethroat on Migration at Maidens Lighthouse.

At 1.10 a.m. on September 17th I obtained a Pied Flycatcher which struck the lantern of Maidens lighthouse. At 4.35 a.m. on September 19th I found a Lesser Whitethroat at the foot of the lighthouse tower.

C. J. PATTEN.

The University, Sheffield.

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CONTRIBUTIONS (Articles or Notes) on all branches of Irish Natural History are invited. Articles must reach the EDITORS, on or before the 10th of the Month, for insertion in the succeeding number. Short Notes will be inserted, if space permit, if received before the 15th of the Month. Contributors are earnestly requested not to write their communications on Postcards.

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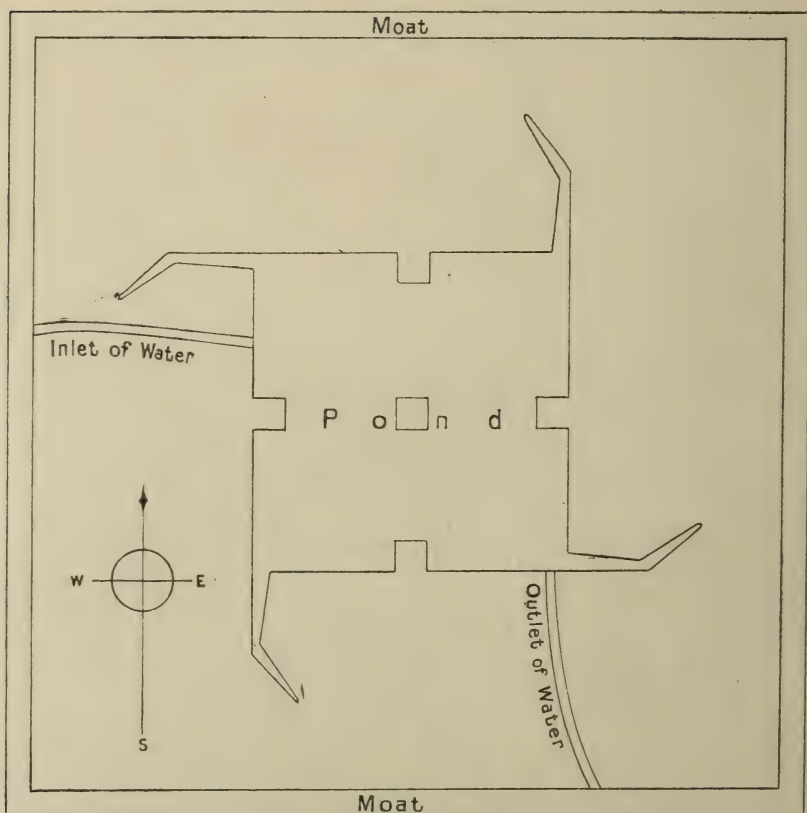
NOTES ON A DECOY IN THE COUNTY OF LOUTH.

BY G. H. PENTLAND.

THERE must have been many decoys in the counties of Louth and Meath in bygone days to judge by the frequency with which the word occurs, but few of them are even recognizable as such, so neglected and overgrown are they. However, there is one very perfect example still in existence, and I think a short description of it would interest many readers of the *Irish Naturalist*. It lies about half a mile north of the old Jacobean mansion of Beaulieu, three miles east of Drogheda, in a lonely position in the fields, and few people are aware of its existence. The tidal estuary of the Boyne (a great haunt of wildfowl) is nearly a mile away. This decoy (of which I give a plan) is in the middle of a grass field of about 10 statute acres. It is square with a pipe at each corner, and measures 100 yards square. There are four buttresses or piers, one in the middle of each side, each about 9 yards square. There is also a square island of about the same size in the middle of the pond. The pond is surrounded by a smooth grassy bank about 6 yards wide, and quite level all round. This bank seems to have been 12 to 18 inches above the surface of the water. Each of the pipes consists of two straight parts connected by an obtuse angle (see plan), and is only about 40 yards long. The field in which the decoy lies is quite square, and was entirely surrounded by a moat about 10 feet wide, with banks 6 or 8 feet in height, and containing at least 2 feet of water. Three sides of this moat were taken away, and replaced by an ordinary ditch and bank some forty or fifty years ago, but the north side is still quite perfect. A flat-bottomed boat used to be kept on this moat. It was there in the lifetime of the father of a man who is now living, say, about 1800 or later. The pond is usually dry now (or rather marshy), but water can be let into it at any time, and the whole place is so perfect that it could be put into working order in a week.

There are some special points of interest about this decoy. The buttresses and the little island are uncommon features.

They were probably made for the birds to "bank" on, as the old expression was. The pipes form an obtuse angle. The usual shape is a curve. The small size of the pond, and its elaborate and careful construction and good state of preservation seem to show that it was made not earlier than the latter part of the eighteenth century. However,



neither the records of the Montgomery family, whose ancestors have lived at Beaulieu since 1660, nor local tradition make any mention of either the building or the working of it. The feature of most interest, however, is the moat or canal which goes round the field, and by means of which the decoy-man in his flat-bottomed punt could go right round the field unperceived by the fowl on the pond, and view them from any point he desired. So far as

I know this is a unique feature in decoys, and its convenience and utility are obvious. The depth of water in the pond could not have been more than one or two feet.

Black Hall, Drogheda.

SOME IRISH BIRD-NAMES HEARD ON RATHLIN ISLAND.

BY R. F. SCHARFF, B.SC.

On Rathlin Island off the coast of Antrim many Irish speakers are still to be found and Mr. Francis Joseph Bigger collected last August some of the Irish names of birds current among the inhabitants, and also from Gaelic fishermen from the Scottish islands whose tongue is similar to that of Rathlin. He also noted the local English equivalents. Both of these names are of interest and they are almost all additions to the list of names I published in the *Irish Naturalist* in July last (*supra* p. 109).

BRIAR BUNTING is a word usually applied in the north of Ireland to the Corn Bunting. The Irish names used in Rathlin Island are τριριθεος and ζαρζαριτ.

BRIDLE-NEB is according to Mr. Praeger, the Razorbill. The Rathlin Irish word is ρριαναε.

COOT—βοταεοαν.

CRANE pronounced "Crann" is here evidently employed to denote Heron. The Rathlin Irish word κυρραι ζριαν seems to correspond to κορρ ζριαν as given by Dinneen for Heron.

CORNCRAKE was entirely omitted from my list through an oversight. Ussher and Warren give τραθνα, τραθναε, τρινεαε. The Rathlin Irish word is ρριαν or ταρριτριαν.

CUCKOO—κυεας.

FALCON—Peregrine—ρεαθας. Buzzard—επομαν. Kestrel—ρπειρλας ζιταρ.

FROST BIRD is unknown to me, and Mr. N. H. Foster never heard the name. It may possibly be the Brambling. The Irish name, ζαθβαν αν ρζιαε βρεαε—meaning the

Finch with a speckled wing—is rather suggestive of the Brambling, which comes to us in the winter.

GANNET is known in Rathlin as *abran*.

GEESE and DUCKS :—The following words are mentioned by Bigger :—

Barnacle Goose.—*caṡan*. Grey Lag-Goose.—*geaṡ glap*. Merganser.—*pioltaṡ*. Pintail.—*pioṡaípe*. Mallard.—*laṡa maṡaṡ*. Teal.—*cranntaṡ*. Wigeon.—*toṡlannaṡ*. Eider Duck.—*laṡa moṡ*.

GOLDFINCH is called *buirṡeos an éinn oíṡ*.

GOLDEN PLOVER.—*peaṡoos*.

JACKDAW.—*peannaṡ beaṡ*.

KITTIWAKE GULL.—*rṡaípeaṡ*.

LAPWING.—*paṡaípean*.

MOSS-CHEEPER is according to Praeger the Meadow Pipit. The same word is also current in the north of England. Bigger states that the Irish word is *uireos*, which in most parts of Ireland is applied to the Lark. Ussher and Warren's *fuirṡeos* for Lark is merely another form of the same word.

NIGHTJAR.—*cuirṡeat moṡ*.

PUFFIN is the term applied in Rathlin to the Guillemot, while the Irish words given are *puttan* and *fuapan*. The term *eun tṡb a rṡaṡain* is probably the Black Guillemot. Bigger also mentions *caṡos* for this bird.

RAVEN.—*piṡcaṡ*. Carrion Crow.—*peannaṡ tṡb*. Hooded Crow.—*peannaṡ glap*.

SEA PARROT is the true Puffin and the Irish word *atbanaṡ* used in Rathlin has also been employed for this bird in Scotch-Gaelic.

SCARF, the term used for Cormorant and Shag, is apparently the anglicised form of the Irish *rṡaíṡ* which is commonly employed in the north of Ireland and also in the Shetlands for this bird.

SEA-SWALLOW has been applied to various species of Tern and also to the Petrel. The Rathlin word *peaṡaṡ* is unknown to me.

SKYLARK.—*uireaṡ*.

SNIPE.—*ṡuṡaṡoṡoṡ*,

SNOW-BIRD is probably the Snow Bunting of which no Irish name was hitherto known. Large flocks of this species often reach Rathlin in the winter months and it must be well-known to the inhabitants. The Irish term *leabhar uirge* is peculiar and may possibly be a corruption of a more appropriate one.

STARLING.—*orpuidéas*.

SWALLOW is known in Rathlin Irish as *altos léar*.

SWAN.—*eala fíadhaic*.

TITLARK.—*neabás*.

WHEATEAR.—*cloéran*.

WILLY WAGTAIL is probably applied to the two common Wagtails. The Irish word given by Bigger is *staireos gúail*.

WOODCOCK.—*coilleac coille*.

National Museum, Dublin.

IRISH SOCIETIES.

DUBLIN MICROSCOPICAL CLUB.

OCTOBER 13.—The Club met at Leinster House, the President in the chair.

D. MCARDLE exhibited *Chantransia scotica*, a rare alga which was discovered in a curious way. Dr. Pethybridge sent a water-moss *Fontinalis squamosa* to the exhibitor for determination, with a note stating that a minute alga was growing on the moss, which had been collected in the Glasnagollum Brook, a tributary of the King's River, at Ballinagee Bridge, 889 feet above sea level in Co. Wicklow. The locality is given in full with the hope that the plant will be collected in fertile condition. Mr. Takeda, who is making a special study of fresh-water species, has named the alga. The plant is caespitose, attached to the leaves of *Fontinalis*, scarcely a half-inch long, sparingly branched, branches attenuated of a light steel blue colour, or more inclining to the colour of *C. pygmaea*, joints 2-3 times as long as broad, cells 1 mm. in diameter. Threads sparingly and shortly branched, monospores very fugaceous, similar in shape and size to those of *C. pygmaea*, with isolated carpospores. The sexual reproduction has been fully worked out in *C. corymbifera*, Thur. On the fertilization of the carpogonium it develops numerous gonimoblasts upwardly and on one side. There is therefore formed a naked corymbose cystocarp, the terminal cells of the gonimoblasts producing the carpospores. The antheridia are likewise developed in clusters. A sexual reproduction occurs by tetraspores and also by other spores which remain undivided and are known as monospores.

These on germination divide into four cells in one plane giving rise to the basal stratum from which the branched filaments spring. In West's excellent work on "British and Freshwater Algæ," p. 39, there is a portion of *C. pygmaea* figured showing monospores, and a portion of the thallus of *C. scotica* from Cornwall, showing the pits in the transverse walls $\times 400$. In Rabenhorst's *Flora Europaea Algarum*, iii., p. 402, 1868, he notes. "In lignis vetustis irrigatis prope Clifton, Angliæ (Liepner); in Scotia legit beat Klotsch (herb. Berol.)." In Cook's British and Fresh-water Algae seven species of *Chantransia* are included, among them the subject of these notes of which he writes "We have no knowledge of this species. The figure is reproduced from Kützing" (*Species Algarum* 80, p. 922, Leipzig, 1849), who states that the plant is found in Scotland. Adams in his Synopsis of Irish Algae (*Proc. R. I. Acad.* Vol. xxvii., Sect. B., No. 2, p. 36) notes *C. scotica* as having been found in Ulster. Prof. G. S. West writes that this record refers to the Gobbins, Co. Antrim. When tracing the geographical distribution of this interesting plant the exhibitor was fortunate in having the assistance of Miss M. C. Knowles of the Herbarium, National Museum, Dublin, and Mr. Gepp, of the British Museum, London.

W. F. GUNN exhibited a series of photo-micrographs of seeds for the criticism of members. They were photographed by gas light, using a low power objective and subsequently enlarging to ten and fifteen diameters. In several cases the sculpturing of the testa or seed coat showed up more distinctly on the prints, than when viewed under the microscope at a similar magnification.

R. SOUTHERN exhibited specimens of *Ogma Murrayi*, an interesting Nematode worm recently described in the Reports of the Clare Island Survey (*Proc. R. Irish Acad.*, vol. xxxi., Part 54, p. 65).

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include a Hare from Mr. Allen Morgan and a pair of Bantams from Mr. C. Bellingham.

CORK NATURALISTS' FIELD CLUB.

JUNE 23.—EXCURSION TO HEALY'S BRIDGE.—A party of fourteen travelled from Muskerry station to Healy's Bridge by 2.40 p.m. train. The study of trees was the principal object of this excursion, and many different species presented themselves, at the station and near the bridge, as well as in the adjacent grounds of Kilcrenagh, which were visited by permission of Mr. Eben Pike, D.L.; the members were shown over the green-houses. Some entered the Leemount grounds near the station, and continued their investigation there, and by the wayside as they walked homewards. D. L. Murphy conducted the party.

JULY 14.—EXCURSION TO CASTLEMARTYR.—A large party travelled to Mogeely by 2.50 p.m. train and walked to Castlemartyr. By permission of Captain Loftus P. Arnott, the members visited the Castlemartyr

demesne, which occupies about 500 acres, all finely timbered, the trees being in great variety. Even in the days of Arthur Young this demesne was well known to students of forestry. The party was shown by Mr. Brooke through the grounds and gardens and the well-preserved Imokilly Castle, where the celebrated Lord Broghill (the first Earl of Orrery) died in 1679. In the "Camellia Garden" a fine specimen of the Golden *Wellingtonia* was seen. Squirrels were found to be established in the woods here, as in many other woods in the county. The barony of Imokilly, in which Castlemartyr is situated, has much to interest the student of animal folk-lore, being rich in legends of enchanted animals, some of which are partially preserved in the place names of the district.

SEPTEMBER 18.—EXCURSION TO MUNSTER INSTITUTE.—A party of sixteen assembled at O'Neill Crowley Bridge, when the conductor, John Griffin, began by calling the attention of members to a pool south of the bridge, where, in what, a few years ago, was a sandpit, many species of water plants now grow, and explained the manner in which such plants spread themselves. Proceeding to a lane between Victoria Cross and Denmhy's Cross the alien plant, *Erinus alpinus*, was found well established on a wall, and an opportunity was afforded of explaining the development of Ergot. Further on in the lane the fruit farm of Mr. Thomas Jennings was reached. Here much was found to interest the members. The adjoining grounds of the Munster Institute were next entered. Prof. Swain gave a short account of the geology of the River Lee near the Institute. Having been shown over the gardens by the conductor, the members walked back to the city. Among the plants noted on the excursion were:—*Elodea canadensis*, *Pulicaria dysenterica*, *Sparganium natans*, *Callitriche verna*, *Linum catharticum*. Two places in which the King-fisher has been known to breed in recent years were pointed out on the return journey.

OCTOBER 13.—EXCURSION TO DUNSCOMBE'S WOOD.—Owing to unfavourable weather, the number of members who walked from Thomas Davis Bridge to "Dunscombe's Wood," Mount Desert (visited by permission of Mr. G. W. Dunscombe, B.L.) was somewhat small. The study of Fungi was the object of this meeting, and a collection, fairly representative of the commoner orders, was made. The system of classification, method of identification, &c., were explained by the conductor, Miss B. E. Duke.

NOTES.

BOTANY.

Orchis pyramidalis on Lambay.

Orchis pyramidalis was omitted, owing to my inadvertence, from the list of additions to the Lambay flora, which was printed in the April issue of the *Irish Naturalist* (*supra*, p. 71). The plant in question was found in the Castle enclosure in the summer of 1908.

CECIL BARING.

ZOOLOGY.

Notes on Lepidoptera.

In August *Hydraecia nictitans* and *H. micacea* came to light, flying into the house to the lamp light. The latter also occurred in October, a very fine female specimen, almost equal in size to the remarkable specimen which Mrs. Johnson took on the road between this house and Poyntzpass (*Ent. Mo. Mag.* 1903).

I spent September at Coolmore, Co. Donegal, and saw *Pyrameis cardui* and *Vanessa io* on the wing there; both species were fine fresh specimens. Mrs. Johnson also saw *P. atalanta*. I was surprised and disappointed not to meet with any of these butterflies here this autumn. Why it should be so I cannot conjecture. October was a very fine month, and I have frequently seen *P. atalanta* here during it.

I met with some larvae at Coolmore, prominent among them being those of the Buff-tip Moth (*Phalera bucephala*) which had in some cases stripped large portions of the willow bushes on which they were feeding entirely of foliage. Besides these the larvae of the Fox Moth (*Lasiocampa rubi*) were common, but I did not trouble to take any of them, having found that they have a rooted antipathy to be reared in captivity. I also met with larvae of *Acronycta psi*, *A. rumicis* and *Notodonta ziczac*.

In October I took two beautiful dark specimens of *Cidaria psittacata* in my house here. They had probably flown in from the ivy outside.

Miss May Alexander, of Acton House, sent me a full grown larva of the Peppered Moth, *Amphidasys (Pachys) betularia*, which she found feeding on rose leaves at Caledon, Co. Tyrone. It has pupated, and I hope to have a nice specimen in the spring. The curious thing was that just before this my friend, Mr. N. H. Foster, M.R.I.A., sent me a description of a larva which was feeding on broom in a nursery garden at Hillsborough, Co. Down. I was unable to recognise it from the description at first, but when I got Miss Alexander's capture I was able to decide that Mr. Foster's larva was the same.

W. F. JOHNSON.

Poyntzpass.

Pantilus tunicatus at Warrenpoint.

On October the 12th I was at Warrenpoint, and as it was a very fine sunny day I was sitting out on the lawn at my friend, Mr. Connor's, residence, and looking over the day's newspaper, as well as enjoying the sunshine and the beauty of Carlingford Lough. While thus pleasantly engaged an insect alighted on the newspaper, and I was roused to action and forthwith transferred it to a bottle. The next day I inspected my capture and found it to be *Pantilus tunicatus* Fab. a Hemipteron which Mr. Saunders in his work on the British Hemiptera-Heteroptera states to have been recorded by Haliday from Ireland, but of which I cannot

find another record for Ireland. It belongs to the Capsidae, which are mostly attached to various plants and bushes, and is said to be found on hazels. There were not any hazel trees near where I was sitting that I saw, and I don't think a Hemipteron would mistake a newspaper for that tree. I shall hope to be able, on another occasion, to make further search for this interesting species in the same locality.

W. F. JOHNSON.

Poyntzpass.

Robin and Mouse.

I was rather surprised to observe a mouse running along the branches of a laurel bush in my shubbery here; but still more was I surprised when a Robin flew from an adjoining bush and made an attack on the mouse. The mouse, however, did not run away, but faced its assailant, rising on its hind quarters and biting at the Robin. The latter evidently did not bargain for so warm a reception, and flew away, whereupon the mouse resumed its journey and disappeared in the direction of my stackyard.

I have wondered ever since whether the Robin thought the mouse was a big moth or something like that which it could eat, or whether it was prompted to its action by its innate pugnacity?

W. F. JOHNSON.

Poyntzpass.

The Arrival of the Chiffchaff.

Mr. Nevin H. Foster mentions (*Irish Naturalist*, 1915, p. 101) that the Chiffchaff (*Phylloscopus rufus*, Bechst.) was seen and heard at Carlingford on 5th April this year, five days earlier than he subsequently noted its arrival at Hillsborough. This species was in song in the woods at Kylemore Castle, Co. Galway, on the 2nd April, 1915, the opening date of my visit to the neighbourhood. My notes show that at the same spot in 1910, I heard and saw the Chiffchaff on 27th March.

GEO. R. HUMPHREYS

Dublin.

Rook's Nest Fifteen Feet above the Ground.

At Aughavannagh, Co. Wicklow, a little colony of Rooks nest in a small group of wind-swept Larches and other trees. The trees are not more than about 25 feet high, and the lowest nest is 15 feet above the ground. Is not this unusually low for a Rook's nest?

R. LLOYD PRAEGER.

Dublin.

The Great Crested Grebe.

This bird, to be seen on all our numerous lakelets in spring and summer, leaves them in October, and is then noticed in large numbers on a sheltered part of the main lake (Erne), but between 11th and 24th November, it disappears altogether till between the 2nd and 25th February, when it returns. Such at least is my experience of several years. I presume it goes to the coast. I wonder if any similar observations have been made by others, or if the birds are in special numbers on the coast in December and January. I mentioned the matter to the late Mr. Barrington, but he appeared to have no special information.

J. P. BURKITT,

Enniskillen.

The Sandwich Tern—a Correction.

I have to thank both the penetration and the courtesy of Mr. Robert Warren for having drawn my attention to a mistaken statement made by me in the November number of the *Irish Naturalist*, that the late Mr. Barrington found "a new colony of the Sandwich Tern" in the course of the present year. I had, indeed, received information to that effect from my friend, Mr. G. R. Humphreys, to whom I am also much indebted for many other facts of interest kindly communicated to me in connection with Mr. Barrington's ornithological tours; but Mr. Humphreys now tells me that in this respect he had been under a misapprehension, and that the colony of Sandwich Terns which Mr. Barrington visited during the breeding season of 1915 was one of those already known to exist. Mr. Warren, whose inquiries have led to this matter being set right, had very justly concluded that so interesting a fact as the discovery of a new Irish breeding station of *Sterna sandwicensis* would have been communicated to him in one of Mr. Barrington's letters written after the expeditions of last summer.

C. B. MOFFAT.

Ballyhyland, Co. Wexford.

Marten in Co. Kildare.

Mr. W. H. J. Tyrell, of Ballindoolan, Co. Kildare, tells me that a Marten Cat was trapped early in July last at Grange, Co. Kildare. It was a male, and he put the age at about two years. The specimen has been preserved for him by Mr. Williams, of Dame Street.

HELEN M. METCALFE.

Enfield,

REVIEW.

AN AMERICAN NATURALIST.

Spencer Fullerton Baird. A Biography. By W. H. DALL, D.Sc. Philadelphia and London: J. B. Lippincott Company, 1915. Pp. xii. + 462. Price 15s. net.

Irish and British naturalists in common with their transatlantic colleagues, may thank Dr. Dall for this valuable account of a worthy life. Spencer Fullerton Baird was born at Reading, Philadelphia, in the year 1823, and died at Wood's Holl in 1888. From his earliest youth he was a keen student of natural history, and at an early age was a leading authority on American birds. He was fortunate enough to make the acquaintance of many naturalists, and he carried on an animated correspondence with Audubon, Dana, Agassiz, Leidy, and Asa Gray. In later years he did much work at fossil vertebrates, reptiles, and fishes. His chief claim to fame, however, does not rest on his original investigations, though these were considerable, but on his great capacities for organisation. In the year 1850 he was appointed Assistant Secretary to the Smithsonian Institution, with the special duty of creating the United States National Museum, and this institution was largely the result of his design and development. In 1871 the U.S. Commission of Fish and Fisheries (now the Bureau of Fisheries) was founded, and Baird was appointed Commissioner. He was amongst the first to appreciate the importance and necessity of adequate scientific investigations as a basis for legislation designed to improve the condition of the fishing industry. A permanent Laboratory for marine research was built at Wood's Holl, Massachusetts, whilst the steamer *Albatross* began her notable explorations of the deeper waters off shore. By many practical measures he added to the wealth of the American fisheries, and prevented the depletion of stocks through excessive fishing and injurious methods of capture. He introduced the Carp to America, built hatcheries for both fresh-water and marine fishes, and successfully transferred the Shad to the Pacific coast, where it has flourished exceedingly. His attempt to stock the Eastern rivers with Salmon from the Pacific coast, was, however, a complete failure. Many millions of young Salmon were liberated in the rivers of New England, but of them all, after they departed for the sea, not a single one has returned. In 1878 Baird became Secretary of the Smithsonian Institution. He was a hard and conscientious worker, and the ill-health, which terminated in his death in 1888, was largely due to over-work. The inspiring story of his life is well told in the handsome volume now introduced to English-speaking zoologists.

R. S.

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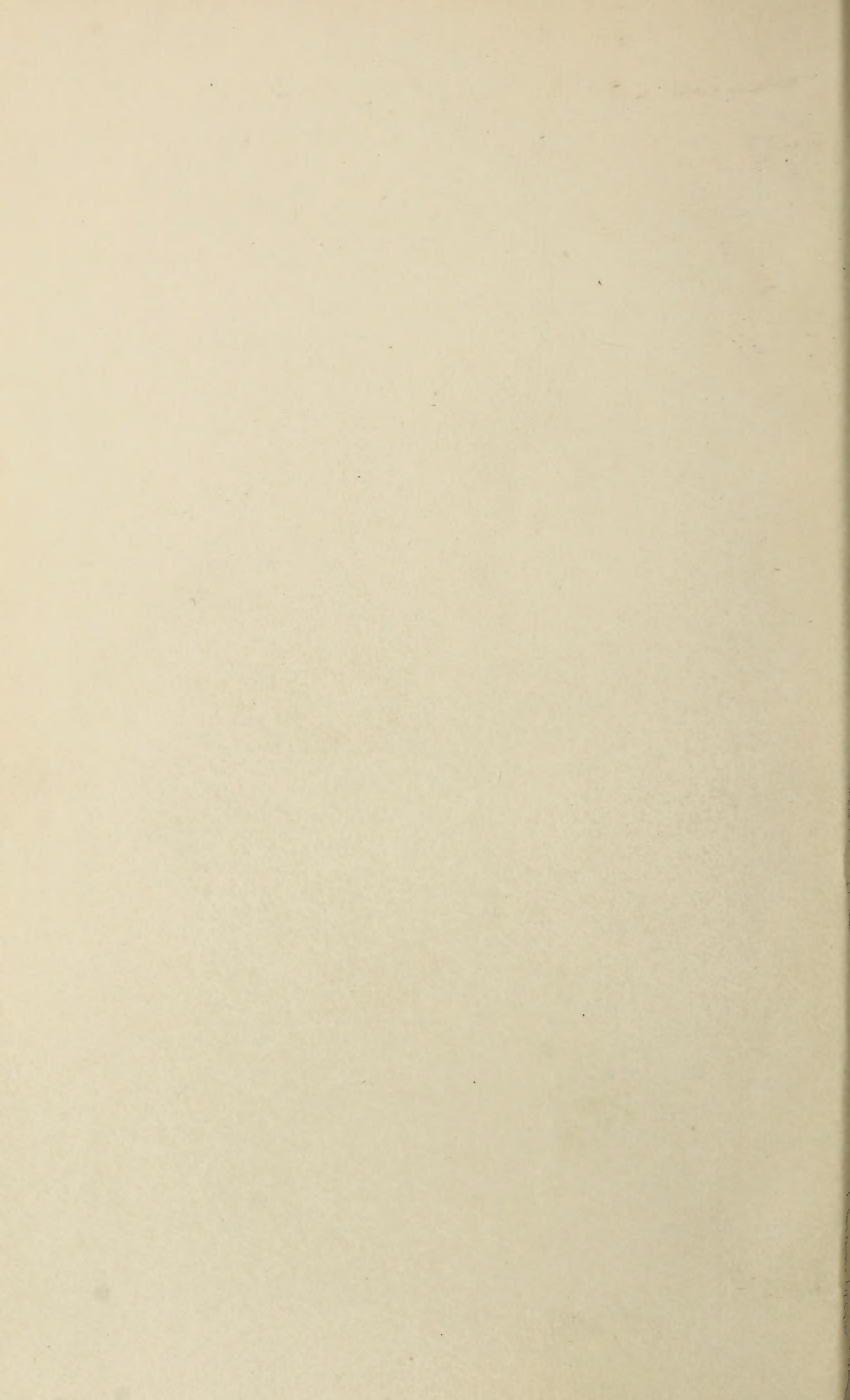
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